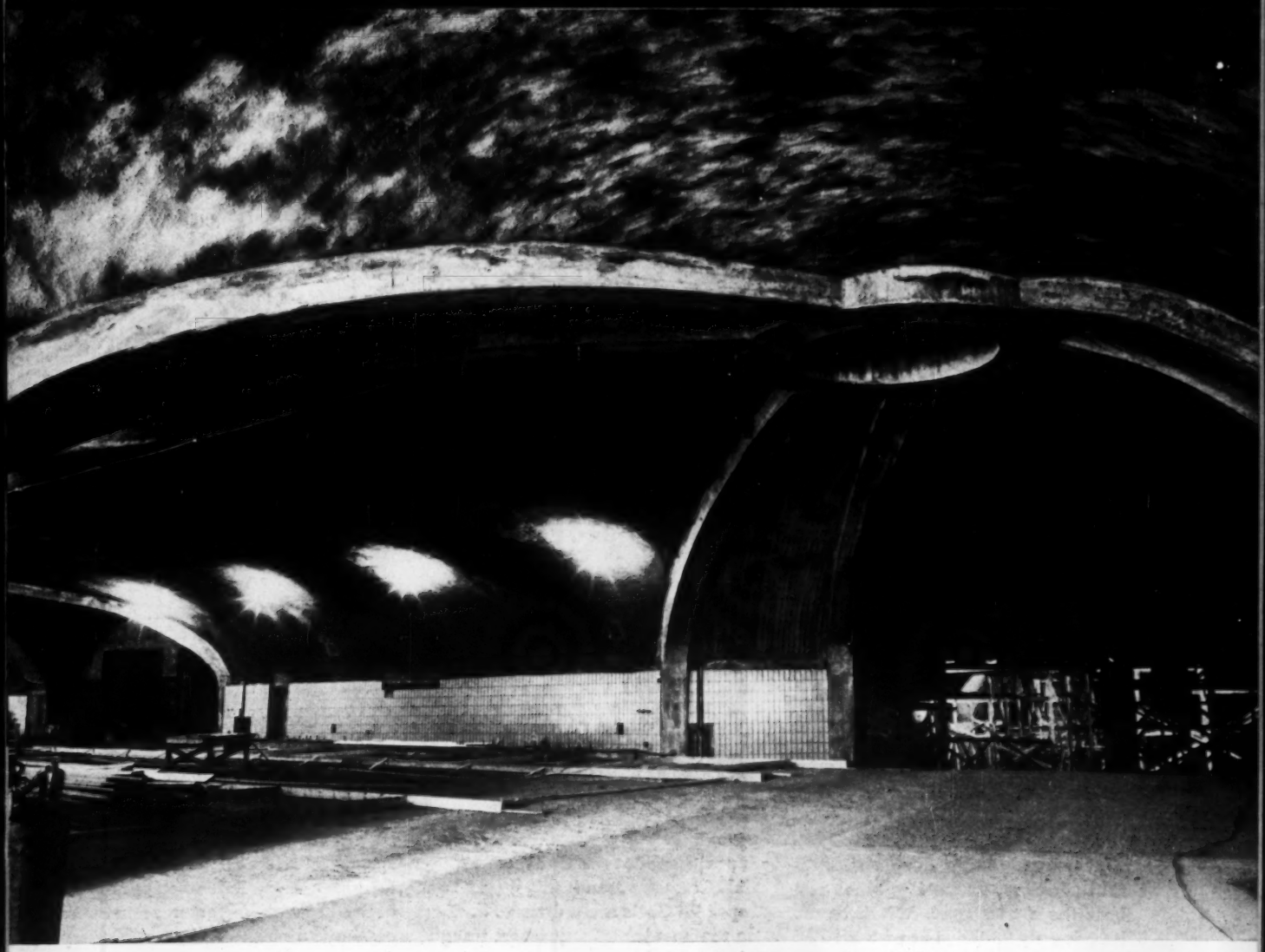
ENGINEERING NEWS-RECORD



Air raid shelter doubles as garage p. 34

A McGRAW-HILL PUBLICATION

E B POWER GS N
UNIVERSITY MICROFILMS Y
313 N 1 ST
ANN ARBOR M H

Big new Oliver Super 99 GM Diesels show power, speed on Iowa road job

Look under the hood of the new Oliver Super 99 GM and you'll find a brand-new kind of tractor power—famous 2-cycle General Motors diesel delivering 72 horsepower on the drawbar. Never before so much power in a general-purpose wheel tractor!

Concrete Materials Company, Cedar Rapids, Iowa, owns five of these new Oliver GM's. Two are shown here pulling double sheep's-foot tampers, preparing black-top base for a new road. Width of the base is only 23 feet, but with a 10′1″ turning radius, these tractors turn around without hesitation, without slowing down!

So much power is there in this new Oliver that these two tractors were able to operate mostly in fourth gear, even when pulling 18,000-pound pneumatic finish rollers. Frank Stotts, Superintendent for Concrete Materials Company, put it this way: "The Super 99 GM's are a dream . . . they do the best job of any wheel tractor I have ever been around."

Operating this new tractor is a dream, too. Fuel and upkeep costs are way low, and you'll find six forward speeds, comfortable seat and platform, finger-tip ball steering, differential disc brakes—features that boost production, cut fatigue, make every job go faster, easier. See your Oliver Industrial Distributor for a demonstration.

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

OLIVER

a complete line of industrial wheel and crawler tractors

Wire Rope at Work—Probably many residents of Spokane, Wash., remember scenes like the one above; photographed while the new Coliseum was under construction. Now those curved steel beams support the roof of the finished structure, whose main enclosure is approximately 210 ft long by 125 ft wide. The largest civic auditorium in the Pacific Northwest, the Coliseum can be used for stage and trade shows, conventions, ice-skating; basketball, boxing, and other indoor activities.

Bethlehem wire rope, flexible and strong, was active during the building. Its chief job, of course, was the lifting of heavy loads, including the many roof beams. This it took in stride, performing reliably as always, and helping the steel-erection work to progress with unusual speed. A typical assignment for Bethlehem rope, which is at home on any type of construction project, large or small.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

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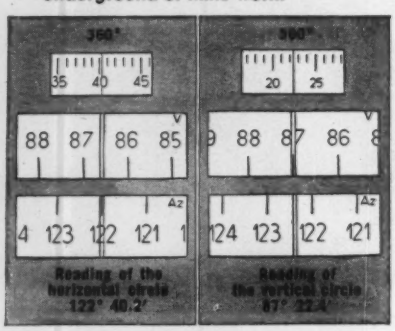

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Robert F. Boger
Publisher

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CONVEYORS . . . . . LOADERS . . . . . DITCHERS . . . . . ASPHALT PAVING EQUIPMENT

Now built by LIMA...the portable, 3/4 - swing, extra-output BADGER

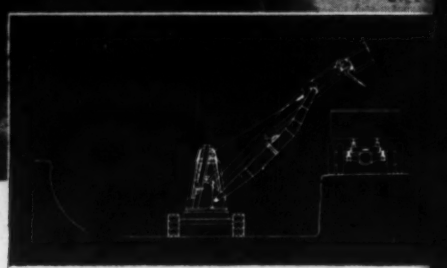
LIMA is proud to be able to offer the fast-moving, fast-working BADGER as part of the standard LIMA line of quality-built machines. This highly portable, hard-working, ruggedly built ½ yard shovel is easily convertible for use as a trench hoe, clamshell, dragline, pile-driver, crane or skimmer. Available with gasoline, Diesel or electric power, the BADGER has proved on the toughest jobs that it's the fastest, most dependable shovel in its class.

Remember, it's as true of the BADGER as of every other machine built by LIMA.

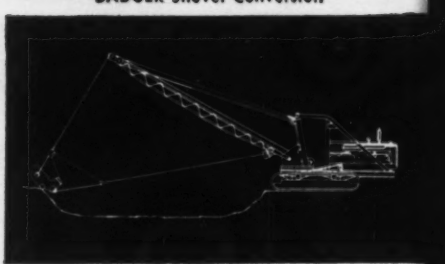
COMPARE QUALITY! No other machine gives you as much:

1. Lighter swinging weight.
2. Greater stability.
3. Better visibility.
4. No tail swing.
5. Extra dumping height.
6. Extra reach.
7. Anti-friction bearings.
8. Easily portable.
9. Easily convertible.

It will pay you to find out how the BADGER can benefit your own operation. Contact your nearby BADGER distributor, or write today to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



BADGER Shovel Conversion



BADGER Dragline Conversion

Above
BADGER Crane Conversion
Below
BADGER Trench Hoe Conversion

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Construction Equipment Division • LIMA • OHIO • U. S. A.

B.F.Goodrich

All-Nylon All-Purpose tires roll 55,000 miles for building materials company

HIGHWAY, shopping center, housing development, industrial plant — all types of construction use concrete and a host of other materials from Hilltop Building Materials, Inc., of Cincinnati. 100 ready-mix trucks, 20 dump trucks and 6 flat bed trucks range over southwest Ohio highways, on rock and rut-choked roads, as often on no roads at all.

That's why Hilltop uses B. F. Goodrich *all-nylon* All-Purpose tires. The report: *all-nylon* All-Purpose tires can be recapped, give up to 55,000 miles of service.

All-Nylon body

Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. B. F. Goodrich *all-nylon* All-Purpose tire body outwears even the extra-thick tread—up to 67% deeper than that of a regular tire, can still be recapped over and over!

Put an end to unnecessary tire failures and costly maintenance. See your B. F. Goodrich retailer now and find out how *all-nylon* All-Purpose and other off-the-road tires can save you money. (Also available in lower-cost rayon construction.) Look under Tires in the Yellow Pages of your phone book or write *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

"ALL-PURPOSE TIRES give excellent traction and clean very well," says Hilltop Fleet Superintendent Edgar Pitzer.

A 20-TON LOAD of concrete at a construction site. Hilltop gets a longer run-per-dollar from all-nylon tires.

Specify B. F. Goodrich tires when ordering new equipment.

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

When the job calls for a

Cast iron pipe water line installed in front of Marshall Field's in Chicago during subway construction.

Installing mechanical joint cast iron pipe to carry mine water for an Alabama Coal Company.

Rugged *is* the word for cast iron pipe. When you stop to think that cast iron water and gas mains—cast without benefit of modern metallurgical science and production skills – are in their *second century* of service in over sixty American cities, you agree that rugged *is* the word for cast iron pipe. Then, take note of the fact that *modernized* cast iron pipe, centrifugally cast, is even tougher, stronger and more uniform in quality, than the product of a century ago. For further information, write Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3.

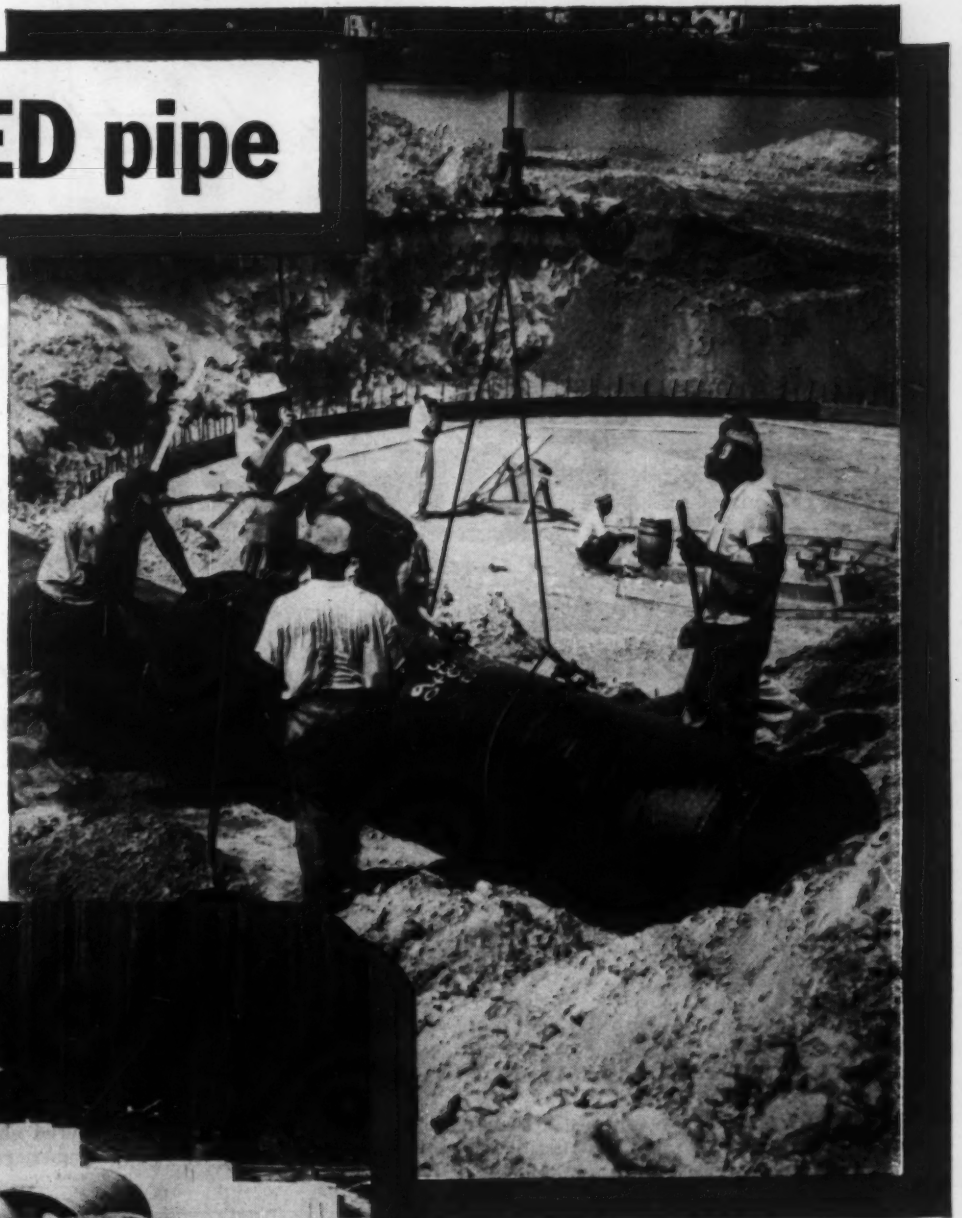
CAST Q IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

24-inch mechanical joint cast iron pipe for gas supply line at Skokie, Ill.

CAST IRON PIPE

RUGGED pipe



Laying 30-inch cast iron pipe for sewage treatment plant at Panama City, Florida.

Cast iron pipe line on piers to maintain grade from sewage treatment plant to outfall—at Durham, N. C.

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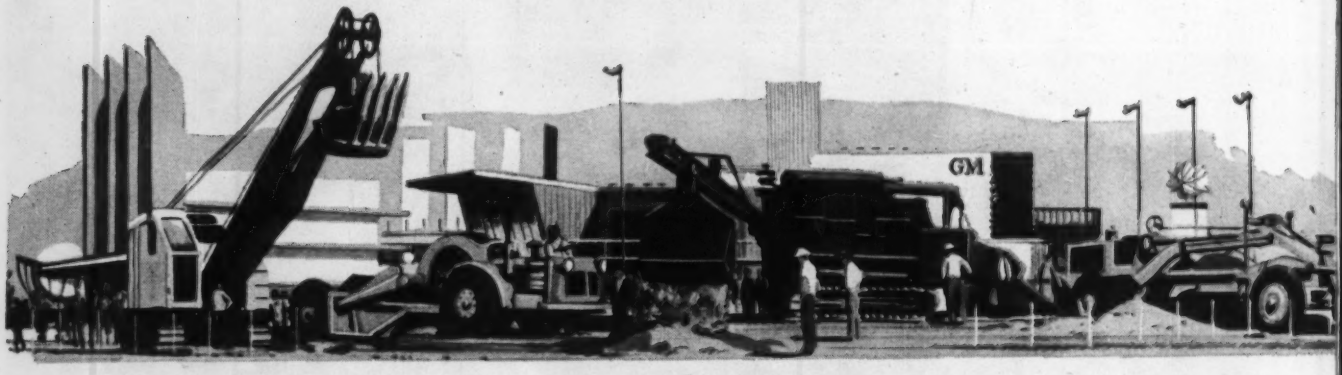
GENERAL MOTORS POWERAMA

Gala Celebration of the 100 Millionth GM Diesel

LAKE SHORE SOUTH, CHICAGO—AUG. 31ST THROUGH SEPT. 25TH



GM Powerama presents—"roads a-building" exhibit of GM Diesel-powered equipment for both concrete and asphalt highway construction—dump trucks, concrete paver, rock crusher, graders, rollers and scrapers.

MAKE your plans now! The General Motors Powerama will be a national event too important, too spectacular to miss.

On 20 acres of grounds, a World's Fair of Power will unfold wonders galore. Fascinating exhibits—thrilling demonstrations—a colorful stage show—everything to make your visit interesting, educational and well worth the trip.

Come and bring the family. *Admission free!*

Plus many other interesting exhibits you won't want to miss—

ALLISON TURBO-JET and TURBO-PROP engines that power America's finest, fastest fighters and transports.

CLEVELAND DIESEL engines powering a submarine you can go aboard and inspect.

ELECTRO-MOTIVE's advanced lightweight 100-mile-an-hour train with its amazing new air-suspension springing.

EUCLID's full line of 10- to 50-ton Diesel trucks and 7- to 18-yd. scrapers.

FABRICAST's exhibit of modern casting methods.

GMC Diesel trucks and coaches, SceniCruiser and spectacular new "L'Universelle."

And a Complete Exhibition of GM's 7 Dazzling Dream Cars:

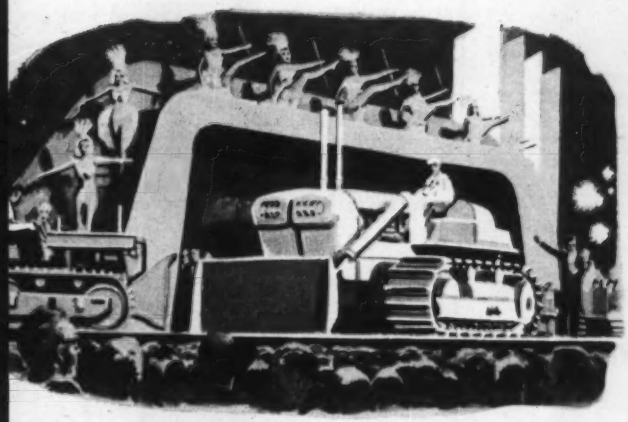
CHEVROLET BISCAYNE • PONTIAC STRATO STAR • OLDSMOBILE "88" DELTA • BUICK WILDCAT III • CADILLAC ELDORADO BROUGHAM LA SALLE II SEDAN • LA SALLE II SPORTS CAR

GM GENERAL MOTORS DIESEL POWER

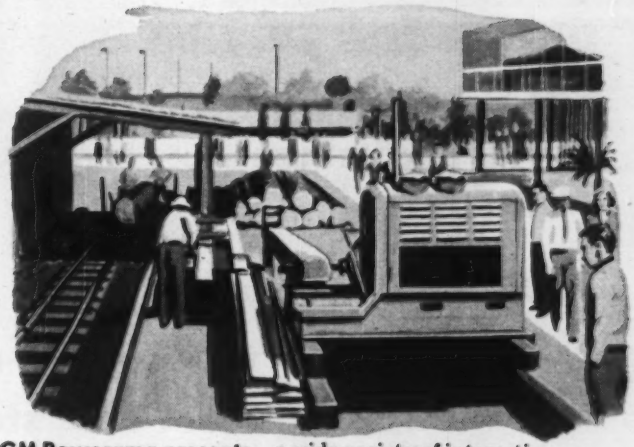
DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

In Canada: General Motors Diesel, Ltd., London, Ontario



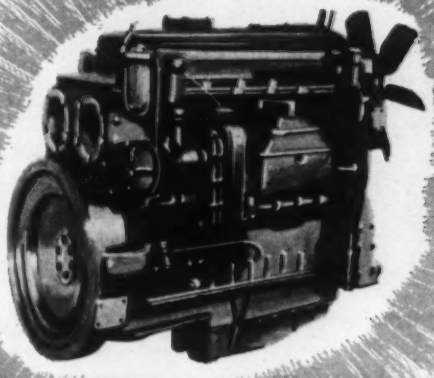
GM Powerama presents—"More Power To You"—a mammoth variety show in which Diesel-powered vehicles perform fantastic maneuvers—with Big Top circus acts and a huge cast of dazzling dancing starlets.



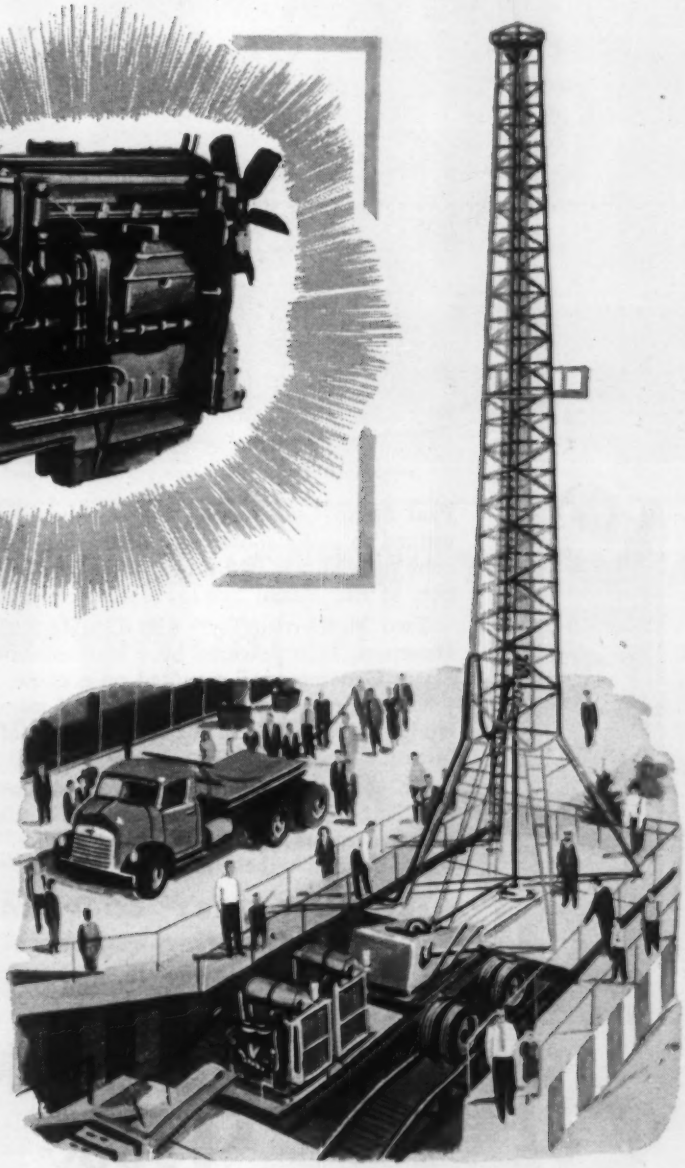
GM Powerama presents—a wide variety of interesting, *operating* exhibits showing the use of Diesel power in many fields including a sawmill, a cotton gin, an irrigation system, a farm tractor and a feed mill.

Horsepower

GM Powerama presents—at the head of the parade—Detroit Diesel's golden "6-71" Diesel engine (representing 100 Millionth General Motors Diesel H.P.). Also, Dr. Diesel's first engine and exhibits ranging from the 1933 World's Fair Diesel engine to the compact new "51" engine that opens new fields for Diesel usefulness.

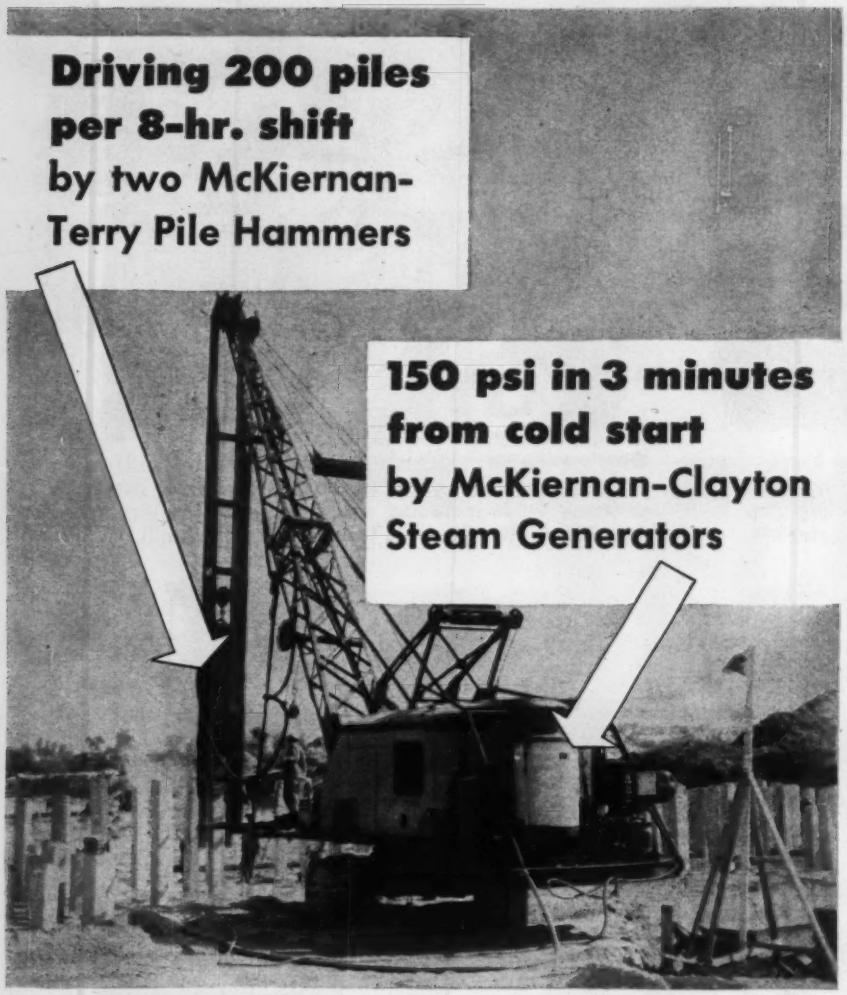


GM Powerama presents—a marine display including GM Diesel-powered shrimp boat and 36-foot and 22-foot pleasure craft for the interest of those who want Diesel safety, speed and economy in their boats.

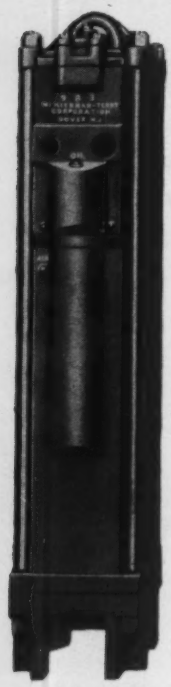


GM Powerama presents—a modern, portable oil-well drilling rig in action, powered by General Motors 2-cycle Diesel engines which have won a reputation for "more power in less space with less weight."

Driving 200 piles per 8-hr. shift by two McKiernan-Terry Pile Hammers



150 psi in 3 minutes from cold start by McKiernan-Clayton Steam Generators



McKiernan-Terry 9B3 Double-Acting Pile Hammer,

Paul Smith Construction Co. of Miami, Florida, wanted to make short work of driving 4,000 concrete piles and 14,000 timber piles for the foundation of the Miami Sewage Treatment Plant.

Two McKiernan-Terry 9B3 Double-Acting Pile Hammers, each powered by a McKiernan-Clayton Steam Generator tail-mounted on a crane, did the job at the rate of a pile in less than 5 minutes, including all operations, for the entire lot of 18,000 piles.

No wonder the contractor reported that all the McKiernan-Terry Hammers and McKiernan-Clayton Generators "gave very good service." Write for bulletins on these job-speeding units.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
80 RICHARDS AVE., DOVER, NEW JERSEY

McKIERNAN TERRY

MK-389

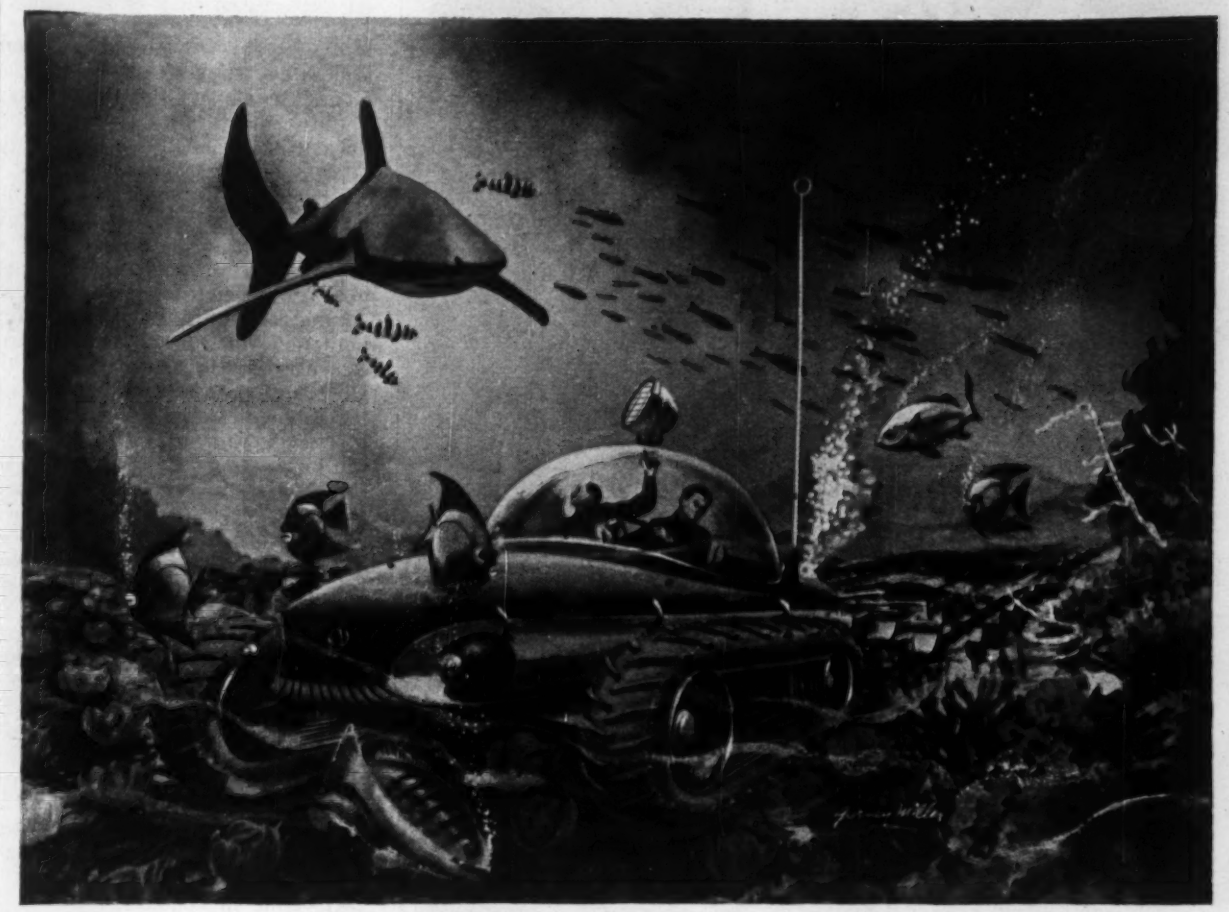
READER COMMENT

Pozzolans in Concrete

SIR: Referring to Mr. Lee's letter on pozzolans (ENR August 4, p. 8) we agree that their more widespread use would alleviate the cement shortage. We also agree that many engineers and contractors are not aware of the benefits and potentialities of pozzolans in concrete, although we are pleased to say that specifying bodies in California are taking a definite interest in pozzolans for most classes of concrete work. However, Mr. Lee is unduly optimistic in his assumption that 25% replacement might be considered an average figure for all concrete. Such a replacement of cement with most pozzolans would increase shrinkage and lower 28 day strengths, a natural consequence of increased water requirement.

Our experience with a calcined, opaline type pozzolan indicates that proper use of the material will neither increase shrinkage nor materially affect 28 day strengths, and in fact, later age strengths will generally be higher, dependent upon curing conditions, than can be expected in comparable straight portland cement mixes. However, shrinkage and early age strengths are a function of the nature of the pozzolan, and we caution that only pozzolans with acceptable service records and of controlled manufacture should be used. This is particularly important inasmuch as no A.S.T.M. standard yet exists for natural pozzolans as cement replacements. Existing federal and A.S.T.M. standards for portland-pozzolan cement are very liberal, and a relatively poor quality pozzolan can be blended or interground with cement to produce an end product meeting existing specifications.

Pozzolans in California, excepting USBR projects, have been used primarily to control alkali-aggregate reaction, a serious problem in coastal and some inland areas. Current thinking casts doubt on the efficacy of low-alkali cement in controlling this reaction, whereas most investigators seem unanimous in their opinion that a suitable pozzolan will do the job regardless of alkali content of the cement. Again, however, the quality of the pozzolan becomes a factor. Some pozzolans require excessive replacements to control this reaction, and consequently would be expected to increase shrinkage and lower strengths at early ages, unless unusual precautions with respect to mix design, concrete control and curing were taken. The most active of the Cali-



Giant crops of microscopic algae . . . rich in vital food elements . . . grown under the sea to help feed a hungry world. Scientists say it will come.

100 years from now... WE'LL "FARM" THE SEA TO FEED A HUNGRY WORLD!

Hard to imagine. But in the fabulous world of tomorrow, there'll be one familiar note: water and gas will still be carried by the dependable, cast iron pipe laid today. Over sixty American cities still use cast iron water and gas mains a century and more old. And today, U.S. Pipe...centrifugally cast and quality-controlled from mines to blast furnaces to finished product...is even tougher, stronger, more durable.

U.S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

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CAST IRON
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE
CAST IRON

U. S. PIPE AND FOUNDRY CO., General Office: Birmingham, Alabama
A wholly integrated producer from mines and blast furnaces to finished pipe.

720 TONS . . . AN HOUR'S HAUL WITH THIS
SAUERMAN TOWER EXCAVATOR

Pioneer's giant excavator is the largest power scraper installation in the sand and gravel industry.

Pioneer Sand and Gravel Co., Seattle, Wash., needs a huge flow of material to supply its ready-mix plants and barges. They're getting it with a 12-cu. yd. Crescent Scraper.

The Crescent handles 480 yds. or 720 tons per hr. over an average haul from 300 to 350 ft. It operates along a 675-ft. span between movable head and tail towers located at the base and top of the 240-ft. high bank.

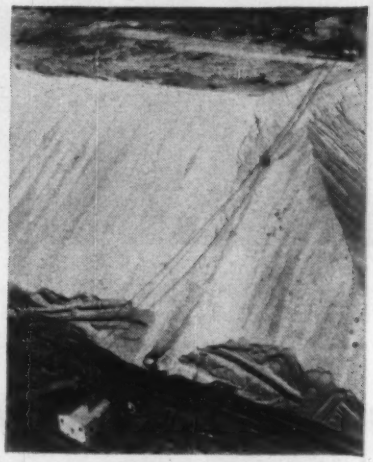
In addition to high rate of delivery, adoption of the Sauerman Method provides two other advantages over the 5-cu. yd. power shovel that formerly operated off the "toe" of the bank. These are: (1) material can now be taken from anywhere on the bank for blending and selection of gravel, and (2) material can be moved down the slope with no danger of cave-ins.

The tower excavator at Pioneer is mounted on portable towers and engineered by Sauerman for economical excavation in this type of deposit. This same digging tool . . . the Crescent scraper . . . can be engineered to your operation to give you equivalent high production at low cost.

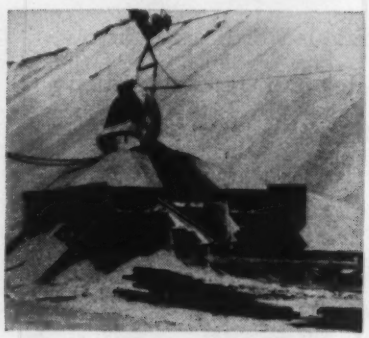
Sauerman Scrapers range from ⅓ cu. yds. up to 18 cu. yds.

Because in most cases it is cheaper to drag material than it is to lift and transport it, *they give you the lowest cost per cu. yd. handled.*

Contact us for information and specific recommendations. Ask for field reports and Catalog A.



This view gives some conception of the height and steepness of the bank on which the Crescent works.



The Crescent delivers to a portable field hopper from which belt conveyors transport the material to the plant.

SAUERMAN BROS. INC.

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READER COMMENT

fornia pozzolans will control alkali-aggregate reaction with a 15% replacement, regardless of the alkali content of the cement. This replacement is not enough to deleteriously affect the normal properties of concrete, but is enough to contribute the desirable properties of pozzolanic concrete so well described in the literature.

Now that a trend toward "engineering" concrete is developing, admixtures are here to stay. The inherent limitations of conventional portland cement concrete do not permit the latitude of properties required to suit the requirements of specific jobs. Our experience with more than 150,000 yards of pozzolanic concrete in the last two years—the pozzolan replacing from 15% to 22% of the cement—leads us to believe that the optimum general purpose concrete of the future is a pozzolanic concrete with a water reducing admixture and/or air entrainment. We also believe that pozzolans will be of more advantage added at the mixer, because the concrete designer will then be able to vary the percentage of pozzolan in the mix to better suit the requirements of the job.

We do not endorse pozzolans as cement replacements, but it does appear reasonable to suggest that, with the critical shortage of cement, pozzolans be seriously investigated as to their value in concrete.

FREDERICK W. DRURY, JR.
Chief Engineer
The Airox Company
Los Angeles, Calif.

CALENDAR

New York Section, American Water Works Association, annual fall meeting, Saranac Inn, Saranac Inn, N. Y., Sept. 8-9.

Western Association of State Highway Officials, annual conference, Jackson Lake Lodge, Wyo., Sept. 8-10.

New England Water Works Association, Lake Placid Club, Lake Placid, N. Y., Sept. 18-22.

International Road Congress, Dolmabahce and Yilditz Palaces, Istanbul, Turkey, Sept. 26-Oct. 16.

Building Research Institute, conference on metal curtain walls, National Academy of Sciences, Washington, D. C., Sept. 28-29.

American Public Works Association, congress and equipment show, Milwaukee, Wis., Oct. 2-5.

Federation of Sewage and Industrial Wastes Associations, Ambassador Hotel, Atlantic City, N. J., Oct. 10-13.

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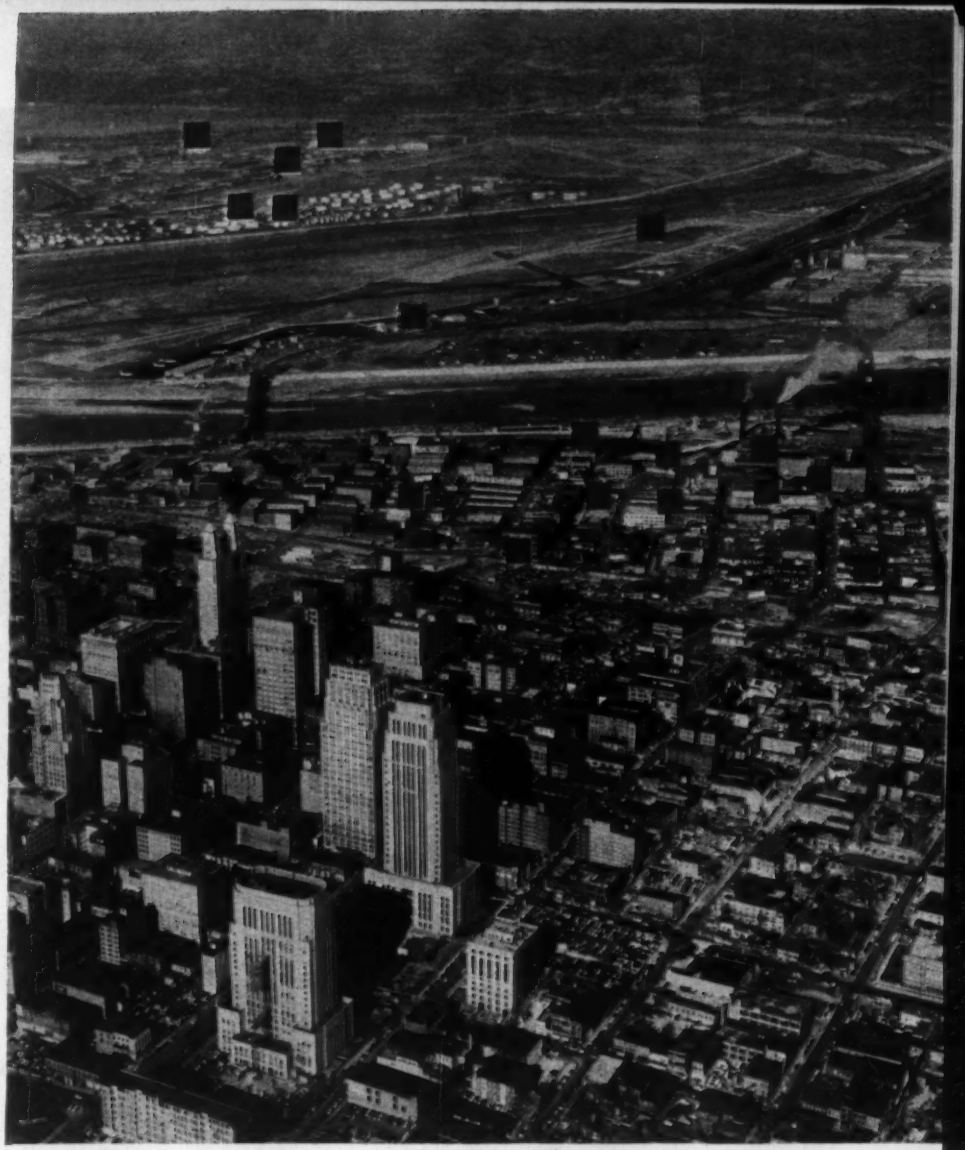

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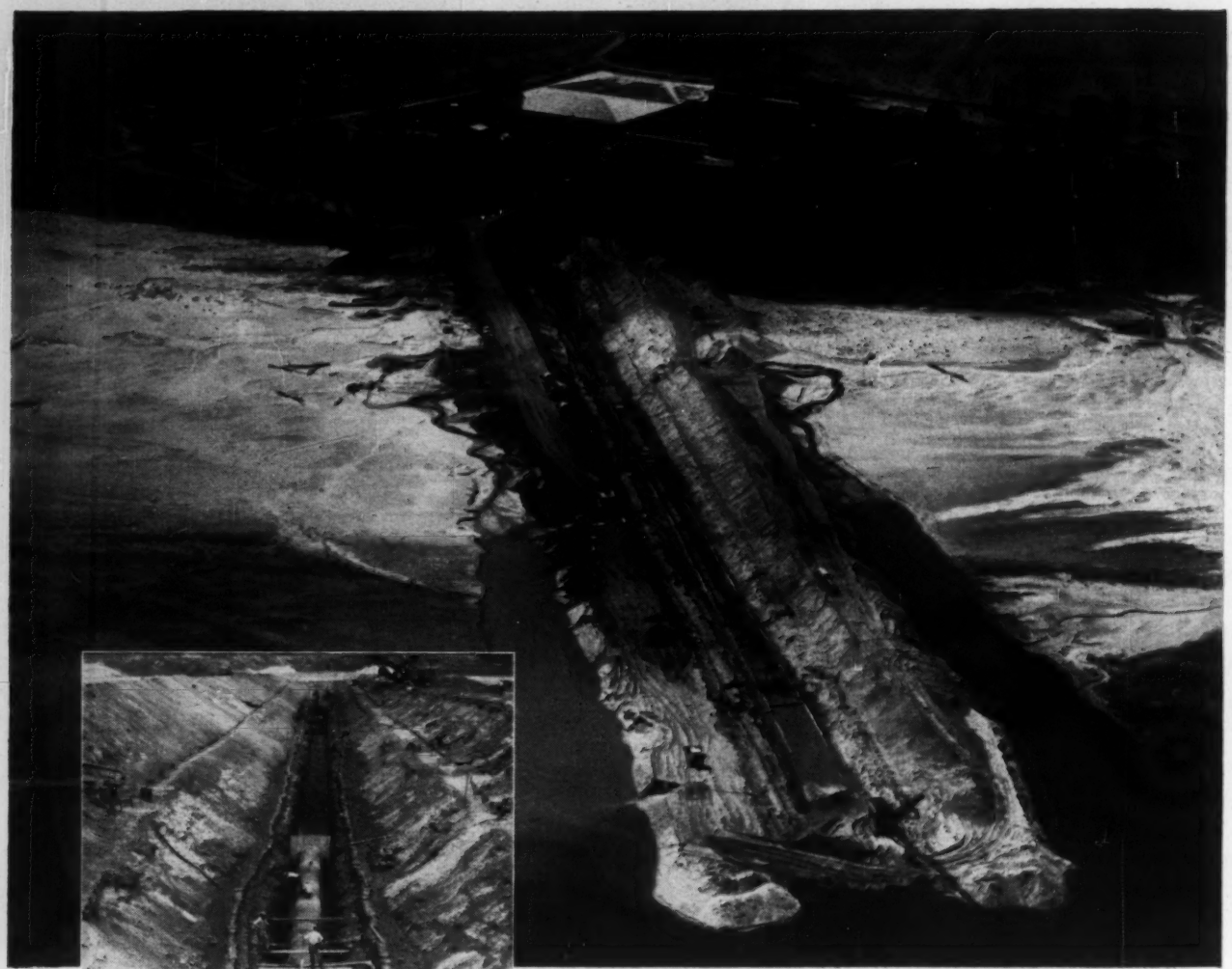

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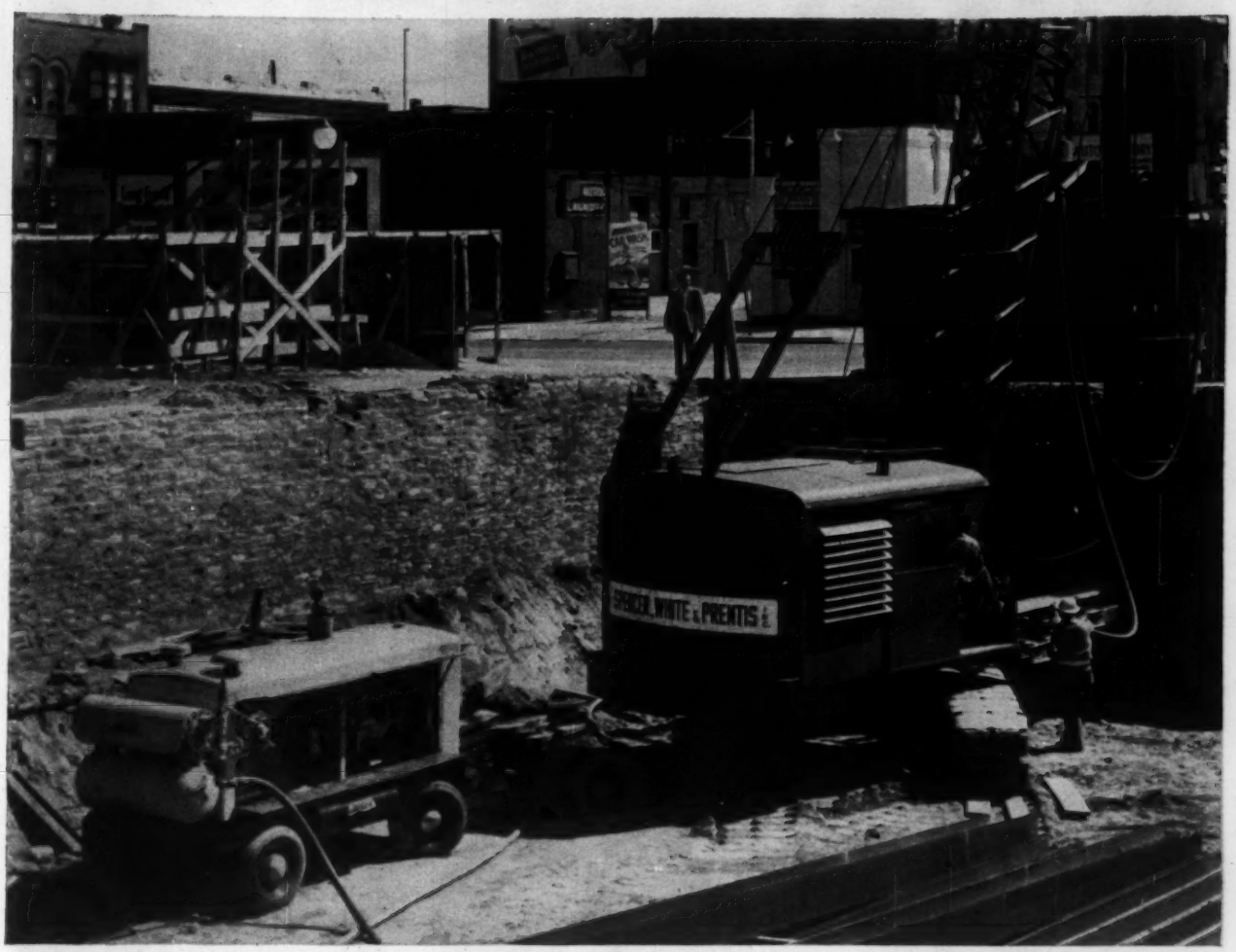

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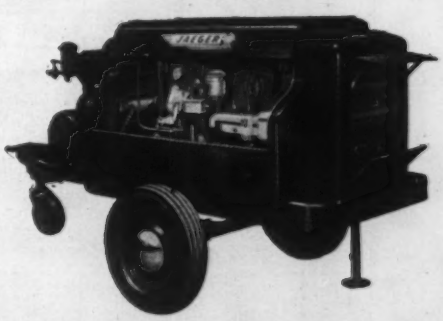

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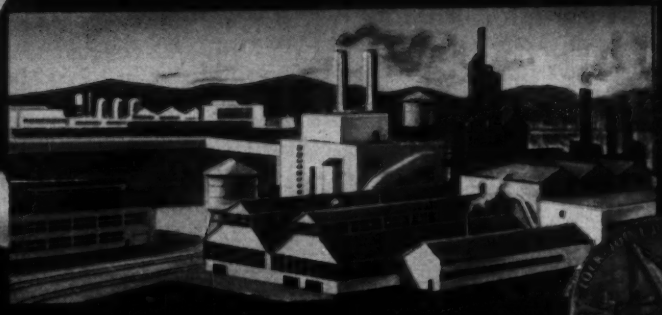

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

WHAT THE FLOODS TAUGHT—The Army Engineers this week came up with some facts that should dispel an impression—widely held last week—that flood-control projects would not have counted for much against the flash floods that turned small streams and tributaries in New England and Pennsylvania into disastrous torrents.

They reported that $60 million in projects, authorized but never built—in some cases due to local opposition or apathy—could have cut New England's flood losses by $50 million. A $43-million flood-control investment in northeastern Pennsylvania could have prevented $20 million in damage.

Moreover, Lt. Gen. Samuel D. Sturgis, Chief of Army Engineers, after a detailed inspection of the flooded areas, could point to additional local protection works that would prevent a repetition of the disaster—and at relatively low cost. (See pages 21 and 22.)

CONTRACTORS WIN PRAISE—State and local officials in the flood-devastated states have been lavish in their praise of the initiative and self-reliance demonstrated by the construction industry. And, these officials have been going all out in cutting red tape so that contractors can operate on a "crash program" basis. (See state-by-state reviews of reconstruction activities on pages 21 and 22.)

ANOTHER STORM SUBSIDES—The National Labor Relations Board this week handed down a decision that is expected to go a long way toward curbing jurisdictional disputes that have plagued the construction industry. It ruled that work assignments made by the National Joint Board for the Settlement of Jurisdictional Disputes are final and binding and can't be upset by the NLRB.

In a case stemming from a Virginia dispute between carpenters and metal lathers over installation of acoustical ceilings, the NLRB made it clear that the Joint Board is the proper and final arbiter for unions—and their local affiliates—that signed the agreement setting up the industry's own board. (See page 106.)

HOW ROAD FINANCING SHAPES UP—Government at all levels will spend a record high of $7,552 million on highways this year. (See page 103.) But, highway departments won't take in quite that much—even though tax revenues and federal grants will be higher than ever before. This is because bond sales for highways have dropped sharply this year. Sales of turnpike bonds were $2.8 billion last year, and the Bureau of Public Roads estimates that they will be only about $800 million this year. However, highway departments and toll road commissions will be drawing on the funds accumulated by bond sales in 1954 and 1953 and not yet spent.

Sound, Light, and Air Conditioning Integrated into One Attractive Ceiling in New D.A.V. Building

Idento-Tags, known to millions of motorists, are manufactured at D.A.V.'s Cincinnati headquarters, and provide its sole source of income. The tags help the motorist to remember license number and assist in recovery of lost keys.

Disabled American Veterans Building, Cincinnati, Ohio
Architects: Luigi Marioni, Cincinnati • General Contractor: Kopf and Kopf
Acousti-Celotex Contractor: E. C. Decker & Company, Inc., Cincinnati

Acousti-Line† Suspension System Combines Beauty, Utility, Sound Conditioning Function

45,000 square feet of ceiling area in the manufacturing section of this modern Cincinnati building were treated with Acousti-Celotex Random Pattern* Perforated Mineral Fiber Tile on the Celotex Acousti-Line metal suspension system. The entire installation was completed in 17 working days. The result: A completely integrated ceiling combining advantageous placement of lighting fixtures and air conditioning diffusers with unusual sound-deadening efficiency.

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WASHINGTON OBSERVER

Bureau of Public Roads is being asked into the fight over highway taxes. Rep. Fallon (D. Md.), chairman of the House Roads Subcommittee, has asked Commissioner Curtis to come up with a report to his committee by the year's end.

Fallon wants facts and figures on highway wear and tear which can help him and his colleagues to come up with an answer to the question: How much more or less should trucks pay in taxes, as compared with what passenger cars now pay?

Scientific studies made so far show that trucks damage roads more—but the question is: Do trucks now pay enough extra in taxes to compensate for the extra wear and tear they give the highways?

Truckers are given credit for killing the highway program that House Democrats came up with this year—which would have put more of a tax increase on the truckers than on other highway users.

•

New hearings on housing problems get underway in New York next month. A subcommittee on housing of the House Banking and Currency Committee has scheduled an investigation that will take them all around the country.

Lack of progress under urban renewal and slum clearance will be high on the committee's list. They want to find out from local officials why the program hasn't "gotten off the ground."

The committee will also look into several other areas including FHA apartment-building program, effects of tightening of terms on FHA and VA insured loans, and the way Fanny Mae and the lenders' new voluntary plan of helping home buyers get loans is working out.

Hearings are scheduled for New York Oct. 5 and 6, Newark Oct. 11, Philadelphia Oct. 12 and 13.

Chairman Albert Rains plans to take the group to the West Coast the Mid West and the South later on.

Other housing investigations are being planned by Rep. Teague, of the House Veterans' Affairs Committee and by Sen. Sparkman of Senate Banking.

•

Generators and turbines for big federal dams may go only to U. S. firms in the future. At least, this is one idea being talked inside the Administration as a way of getting government officials off a foreign policy spot that causes a lot of friction.

Foreign suppliers have been under-bidding U. S. producers on heavy hydro-power equipment for big dams—the latest example being generators and transformers for Chief Joseph Dam on the Columbia River in Washington. English Electric Export and Trading Co., Ltd., bid $5,460,361 on six generators—almost $900,000 under the lowest American bid from Westinghouse Electric Corp.

The Administration—after long delay—gave the order to Westinghouse on the grounds that Pittsburgh has been certified as an area of "substantial unemployment" (which means 6% of the labor force out of work.)

Answering bids in this fashion creates criticism abroad. The Italians, Swiss, Japanese, as well as the British, are all affected. They get bitter about U. S. pressure for more trade abroad for U. S. exporters, while we turn down their low bids for U. S. purchases on the grounds of injury to our economy—at a time when U. S. prosperity is unprecedented.

Hence, U. S. policy-makers are looking for a way out. But they would probably have to go to Congress, which passed the Buy-American Act back in the 1930s, to get the kind of answer that would take the President and Administration off the hook.

BORDEN *first* IN FLOOR GRATING

USES OF GRATING . . . WHERE ONLY BORDEN QUALITY WOULD DO . . .

Here on this page are a few of the many new or unusual uses for grating being pioneered every day. Each is an exacting job where only standards of quality equal to BORDEN'S will do.

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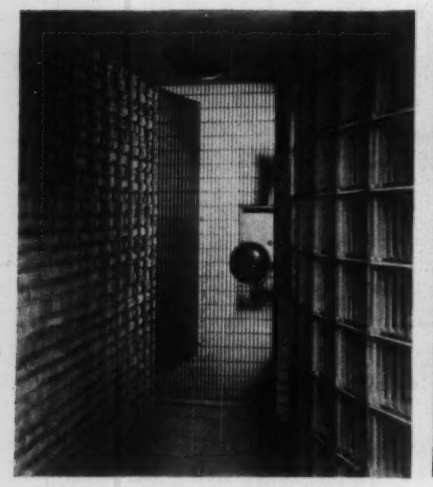
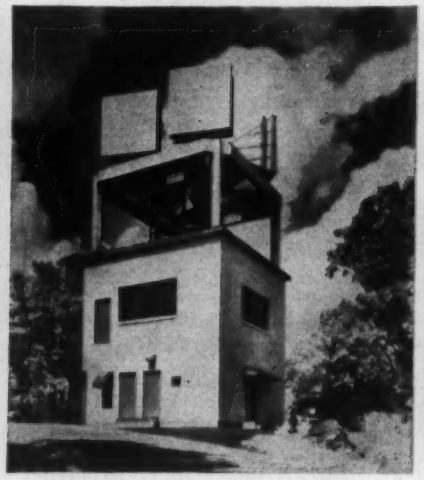
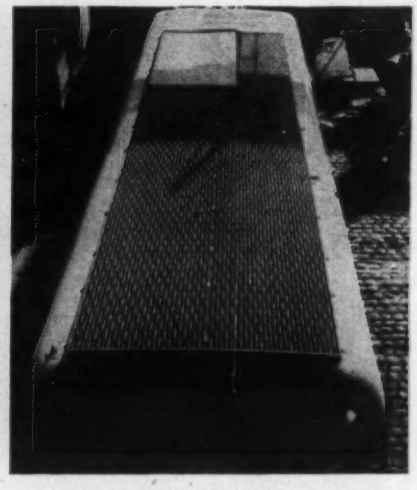


Only the finest precision manufacturing would satisfy the architect who designed this door. BORDEN is recognized as a leader in quality, custom-manufactured gratings.



Television relay stations and radar stations that gird our continent have adopted grating as standard outside platform material. It will not collect snow as most other platforms will.



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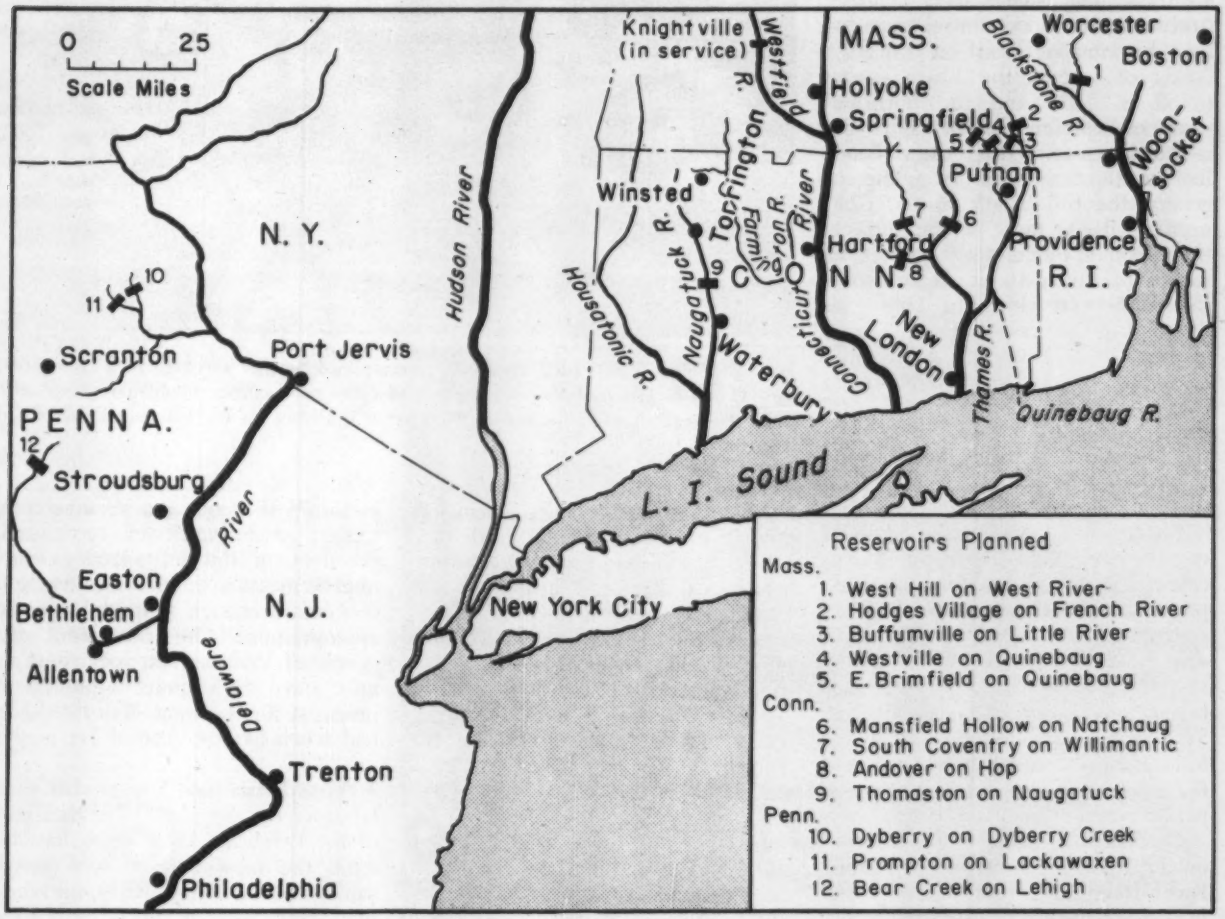


Lesson From the Flood:

Planned but Unbuilt Projects Could Have Saved $70 Million

An investment of $60 million made in 1951 on designed flood control works already authorized by Congress in the areas of Connecticut, Massachusetts and Rhode Island ravaged by the late August flood could have cut the losses by $50 million. And in the other area most affected, northeastern Pennsylvania, a similarly timed expenditure of $43 million on other authorized projects would have brought $20 million in savings. (Accompanying map notes these planned but unbuilt projects.)

These figures, supplied by the Office of the Chief of Engineers on ENGINEERING NEWS-RECORD's request for a careful and conservative estimate, clearly reflect what local apathy, and not infrequently active opposition to the flood control measures, did to increase the damage from this flood. They also suggest, in the light of the total property loss, now being estimated at $1.667 billion, that a good many more flood control projects could have been planned, authorized —and built—and still would have returned much of their cost in this single storm.

There are many who will argue that no combination of protective works could have brought the losses from this unusual storm below disaster proportions, but Lt. Gen. Samuel D. Sturgis, Chief of Engineers, is not one of them. He believes that an investment of $150 million more in additional reservoirs and local protection works to control and contain floods on the downstream tributaries of the Connecticut River and nearby coastal streams would definitely prevent a repetition of this latest flood catastrophe that has struck the New England area.

General Sturgis is also certain that the completion of the already authorized $300 million flood control program for the upper Connecticut and its tributaries would provide similar protection to all of New England. This would require the expenditure of $250 million, since projects worth about $50 million have already been built.

The indicated total necessary investment of $400 million in New England would include local participation in an amount of upwards of $150 million (based on previous experience with what land, easement and damage payments add up to) and this may be more difficult to arrange even than in the past because of the huge losses sustained by industry, the biggest tax-

. . . Flood

payer in New England. (See pages 22-24.)

• Projects that would have helped—Army Engineer flood control plans for New England are based on two great floods of record, the heavy spring runoff in 1936 and the hurricane storm of September, 1938. Since the rainstorms precipitating those floods had north-south axes extending in general the full length of the Connecticut River, most of the projects were planned to counter the effects of storms of this pattern. By contrast, the storm that Hurricane Diane induced had an east-west axis across southern New England, striking the coastal rivers and the downstream tributaries of the Connecticut. Nevertheless, there were a few projects in the program that would have helped the affected area, as the one or two that were completed clearly showed.

For example, Knightville reservoir on the Westfield River in Massachusetts is one of the few completed projects on the Connecticut River system. Consisting of a 160-ft earth dam 1,600 ft long, inclusive of a 400-ft concrete spillway, it provided storage for 49,000 acre-ft of water. It cost $3.2 million, and saved an estimated $11 million of damage in the recent flood—which was a most spectacular performance.

Or take Mansfield Hollow reservoir on the Natchaug River in the Thames River Basin, only completed project in the area most directly in the storm. This 12,422 ft long dam, 70 ft high with a 690 ft long spillway, cost $6.6 million and prevented about $3 million of damage in the city of Willimantic, Conn.

It is interesting to note that this project was undertaken on the showing of a benefit/cost ratio of 1.3, and that in just one flood it furnished benefits to nearly 50% of its cost. These benefit/cost ratios cannot, of course, be computed on the basis of disaster floods, but have to be based on actuarially figured flood frequencies using recorded data. Under these conditions the best ratios are seldom much more than unity, which explains why a single disaster can sometimes pay back the entire cost of a project. (Mostly, of course, benefit/cost ratios have to be considered for the entire program in a particular river basin since it is the total cost that is important. Thus the proposed Connecticut River system of 26 reservoirs has a ratio of 1.3, with some individual projects lower and some higher.)

But for one Mansfield Hollow reservoir that was completed, there were eight others in the area which, although designed and authorized, were still on paper. And there were a number of local dikes and flood walls that were in the same useless stage. Three river basins were involved, the Housatonic, the Thames and the Blackstone, all in the coastal river category.

Wide-World Photo

WATERBURY'S SEVERE DAMAGE exemplified by this wreckage of a New York, New Haven & Hartford Railroad bridge and other rail facilities, could have been mitigated if the reservoir authorized at Thomaston upstream on the Naugatuck River had been built.

In the Housatonic River basin a reservoir had been authorized on the Naugatuck River at Thomaston upstream from Waterbury, one of the most severely damaged cities. It required a rolled earth dam 136 high and 1,800 ft long, and the total cost, as estimated in 1951, would have been $13.2 million made up of $4.3 million for construction and $8.9 million for land and damages. The 41,500 acre-ft that this reservoir could have held, it is estimated could have prevented losses equal to the entire cost of the project. Interestingly enough the benefit/cost ratio of Thomaston reservoir was only 0.5.

In the Thames River basin a seven reservoir system had been planned, and only Mansfield Hollow had been built. The other six—Hodges Village, Buffumville, East Brimfield, Andover, South Coventry and Westville—would have cost about $30 million at current prices, and it is estimated that they would have effected a saving of $28 million.

In the third river basin, that of the Blackstone River in Massachusetts and Rhode Island, a reservoir at West Hill and three local protection projects at Worcester, Woonsockett and Pawtucket had been planned and authorized. The entire program would have cost about $10 million and the estimated savings in the recent storm would have been $14 million. The Blackstone had caused serious damage in the 1938 flood, and its flood protection needs were well recognized, yet none of the authorized channel improvements nor the storage reservoir ever found enough support to get an appropriation. On the record the people of Woonsockett look most remiss, since the channel improvement proposed for that now devastated city had a benefit/cost ratio of 1.4.

• Pennsylvania too—A somewhat similar story can be recited for that part of the Delaware River basin that suffered the most damage in Pennsylvania. On the Lehigh River, for example, there were three authorized projects—Bear Creek reservoir and local works at Allentown and Bethlehem—with a combined benefit/cost ratio of 1.3. The total damage reduction they would have effected in the recent flood is estimated at $19 million. Their total cost in 1951 would have been less than $30 million, of which $16.5 was for a 234-ft earth dam 3,000 ft long at Bear Creek.

Also, a little farther north on the Lackawaxen River, two reservoirs had been authorized at Dyberry and Prompton. Dyberry would have stored 24,500 acre-ft behind a 112 ft earth-dam 1,280 ft long, and Prompton reservoir, created by a 140 ft earth dam 1,230 ft long, would have stored an additional 48,300 acre ft. They would have cost $11 million in 1951 ($13 million now), and their principal purpose would have been to reduce the crests on the Delaware, a useful objective since in the recent flood new high water marks were set at Easton, a few miles downstream. It has been estimated that these two reservoirs would have affected a saving in damages of about $1 million.

. . . Reconstruction Under Way

Contractors, Army Engineers, and federal, state and local public works agencies teamed up this week for a mammoth reconstruction job in the New England and Middle Atlantic states as the toll continued to mount in the wake of the worst flood disaster in the nation's history.

Army Engineers' estimates of damage added up to $1.667 billion for direct property damage only. In New England, Connecticut bore the brunt of Diane's fury with $900 million in damage. Massachusetts had $400 million in losses, and Rhode Island, $170 million. In the Middle Atlantic region, Pennsylvania's damage totaled $150 million, New Jersey, $41 million, and New York, $11 million. Also included in the Engineers' estimate: Virginia, with $4 million damage and Maryland, with $1 million.

Realizing that the states alone could not cope with a disaster of this magnitude, President Eisenhower ordered all agencies of the federal government to give the maximum amount of federal aid possible. Federal Civil Defense Administrator Val Peterson, who was given responsibility for directing the federal share of the relief program, promptly called upon Army Engineers, veterans of the fight against floods.

Lt. Gen. S. D. Sturgis, Chief of Army Engineers, personally directed the Corps' efforts.

His first order: To clear debris and restore essential public works and services in the disaster zone. This work was immensely expanded when FCDA Administrator Peterson assigned the Corps the task of rehabilitation of local works and services—the first time the Army Engineers had been given this responsibility.

To carry out this assignment, the Corps faced an expenditure of $80 million to $100 million, of federal money. Army Engineers will borrow the bulk of this money from their flood control appropriations. Congressional leaders have promised to reimburse the Corps next January.

Men, materials and equipment were liberally supplied by the Army Engineers. Officers taking advanced engineering courses at Fort Belvoir, Va., were rushed to disaster areas to aid local flood-fighters in restoring essential services. Bailey bridges were rushed to Connecticut, Pennsylvania and New Jersey from Army Engineers' supply depots, to temporarily replace major bridges that were destroyed. The range of Engineers' services was wide. Portable generators, to supply electric power, were furnished in critical areas. Water purification plants were set up. One major city, Scranton, received all of its water supply from Army Engineers' facilities for several days.

But other federal agencies were also active in the disaster relief and reconstruction program.

The Small Business Administration stepped in to give flood ravaged areas special disaster loans for "reconstruction, rehabilitation or replacement" of facilities damaged by flood waters.

Further help for industry came from the Office of Defense Mobilization which authorized the rental of idle government-owned machine tools and other production equipment to aid crippled factories—both defense and non-defense.

ODM is also considering a plan to grant priorities to damaged facilities for procurement of building materials, such as steel and cement.

And, the Federal Housing Administration removed recent credit restrictions in the disaster areas to permit no-down-payment loans on housing.

While the federal government played a major role in the reconstruction program, the biggest job fell to the states and the local governments. In every major state affected, state governments called out all personnel and sent them into the stricken areas. And, at the local level, cities and

BRIDGES of all types were hard hit and their restoration constitutes one of the major emergency reconstruction tasks. Swollen waters of the Delaware River knocked out the mid-span of the steel cantilever Northampton Street Bridge linking Easton, Pa., and Phillipsburg, N. J. (top photo). Rampaging Pocono Creek smashed a reinforced concrete bridge at Stroudsburg, Pa., (lower photo).

ENR Staff Photos

United Press Photo

ROADS BECAME RUBBLE after rampaging flood waters left, and their reconstruction is a major problem facing all levels of government. A typical casualty (shown above) is Main St. in Winsted, Conn., which was completely ripped apart from one end to the other by the Mad River. The roadway, 8 ft lower in some places than before the flood, now is strewn with broken water mains and sewer lines.

towns relied heavily on all able-bodied men sometimes on a volunteer basis, sometimes hiring them.

Contractors were among the first to go into action. This had been expected, and state and local disaster plans in some areas anticipated a draft of contractors and their equipment in event of a catastrophe. The draft was never needed. Contractors volunteered their services within hours and assembled the needed men, materials and equipment rapidly. Public officials commented frequently that contractors did not even mention the matter of payment.

This is the situation in the flood areas this week:

Connecticut

Connecticut still does not know just how hard it was hit. So far only five communities, Winsted, Thomaston, Farmington, Washington and Putnam, have complete reports on damage. These five towns, with a combined population of only 50,000, report total damages of $69.4 million. Reports are not complete yet for larger cities such as Waterbury and Naugatuck.

Damage to state roads and bridges has been estimated at $25 million by Newman E. Argraves, state highway commissioner, who reported that 50 bridges were destroyed or heavily damaged. No report is available on the extent of highway repair that will be necessary. Twenty Bailey bridges, provided by the Army Engineers, are being used to replace vital bridges swept away (ENR Aug. 25, p. 22).

The Highway Department has engaged 35 contractors for road and bridge reconstruction work under authority given the highway commissioner by the Governor to recruit contractors and workers from all parts of the state.

The contractors are being paid out of the state highway fund. Payments will continue in this manner until a special session of the legislature draws up other plans for the financing of this work.

In many of the communities hit by the flood, plans had been made previously to mobilize equipment and manpower during a disaster. However, the plans to draft contractors and equipment were not needed, because contractors were quick voluntarily to bring equipment to the areas where the need was greatest. State officials commented that contractors seldom raised the question of payment.

Army Engineers will be responsible for cleanup of rivers, streams and other bodies of water. And, the Corps also will furnish the manpower to erect bridges and repair roads.

Army Engineers already have contracted for more than $300,000 worth of work and the total is increasing daily. Most equipment is centered in the Naugatuck Valley where the toll of bridges and dams was highest. Army Engineers also are estimating the work involved in reconstruction, and are collecting vital information on stream flow.

The State Water Commission is inspecting dams, checking on those washed out or badly-damaged. Early reports showed five dams, mostly for mill use, washed out.

Pennsylvania

Although Army Engineers estimate flood damage in Pennsylvania at $150 million, some state officials feel the total may go as high as $350 million when final surveys of the damage are completed early this month.

Some 12,000 commercial and industrial properties were battered in the four hardest-hit counties; damage to housing and public works projects was extensive.

The state reports that 50 primary bridges and 150 secondary bridges were directly affected by the flood, and about 150 mi of roads require reconstruction and repair. Damage to state roads and bridges is estimated at $30 million. Another $15 million damage occurred on locally-maintained roads and bridges. In addition, $10.4 million will be needed for stream channel clearance and to rectify stream flows. At least 47 water and sewerage systems in eastern and northeastern Pennsylvania were damaged.

The Corps of Engineers will spend about $20 million in federal funds for emergency repairs to publicly-owned utilities, communications, roads and bridges. The money will come from funds now on hand for dredging and other Army-authorized projects. When the disaster funds approved by the President and Congress are available, the money that has been advanced by the Army Engineers will be returned to them.

Meanwhile, the state and various local governments are going ahead with reconstruction without waiting for financing.

State and federal engineering teams have set up headquarters in the 11 counties rated critical areas. Reconstruction work is being handled by the state departments and local governments.

The Pennsylvania Highway Department, the Forests and Waters Department and the State Health Department have ordered all personnel into the affected areas. The Highway Department is negotiating emergency contracts for road and bridge repairs by eliminating routine procedures, such as bids. Highways Secretary Joseph J. Lawler, for example, negotiated a dozen contracts for road and bridge repairs in the Stroudsburg area before the flood waters had subsided.

Lawler praised Pennsylvania roadbuilders and general contractors for their work during the emergency. "At our request contractors rushed personnel and equipment into the stricken areas," reports Lawler. "Money was

Wide-World Photos

MILLS ALONG THE WATER caught the full impact of the Blackstone River as it raged through Pawtucket, R. I. (left) after Horseshoe Dam burst at Woonsocket, several miles north. Five-story mill (right) was smashed in Woonsocket when the dam failed.

not even mentioned in the negotiation of their contracts."

Federal, state and local contracts are being awarded on a cost-plus basis to contractors familiar with the areas. But economies are effected wherever possible. For example, the state dismantled a 350-ft temporary bridge in use at Williamsport since 1946 and moved it in sections to Stroudsburg, where it was put in service the first of this week.

Massachusetts

The federal government has promised Massachusetts $15 million in flood aid. In addition, the state legislature has authorized two bond issues totaling $55 million to finance reconstruction work.

The first bond issue is a $30-million issue to be retired in 20 years from general revenues. This will be used for restoration of water and sewerage systems and other public improvements.

The second bond issue, for $25 million, will finance repairs of state highways and bridges, as well as local roads, bridges and streets.

The state's financing measure also provides for the reimbursement of towns and cities for abatement of taxes on damage to private properties.

Gov. Christian A. Herter has asked that his original measure calling for a $150-million highway bond issue for this year be reduced by $25 million. This reduction would compensate for the $25 million now needed for emergency highway repairs.

A special flood relief board will administer the $55-million program. And, it has been given the unusual authority to make direct contracts for emergency and permanent repairs.

The Massachusetts Turnpike may run into a four-month delay because of the poor condition of roads over which materials must be shipped. And heavy railroad damage seems to preclude use of rail transport.

But the turnpike itself is credited with saving at least one small town. In many places, the wide, high fill of the toll road served as an effective dike. In Charlton, a devastated area, the toll road took the initial shock of a dam which burst at Glen Echo Lake. This prevented a wall of water from inundating the little town in the valley below Charlton.

The Corps of Engineers has brought in a team of 80 engineers from the Kansas City and Omaha Districts to assist state and local agencies. And, as another means of handling reconstruction, the Corps has taken over certain civil defense work. Some 24 officers have been sent out into the field to collect data on damage and emergency requirements.

Rhode Island

Total flood damage in the State of Rhode Island has been estimated at $170 million by Army Engineers. At least $50 million of this damage was in Woonsocket.

Five highway bridges in the state were lost; three other highway bridges will need major repairs. Two railroad bridges were destroyed when flood waters undermined the roadbeds.

Less than one mile of highway was washed out. But minor damage in numerous locations will run the reconstruction cost to $100,000.

Aside from bridges and highways, the Woonsocket sewage treatment plant is the only major public works project in the state that was damaged.

An estimated 50 Rhode Island industrial plants were damaged. Physical loss of plant and equipment is from $6 million to $8 million.

New Jersey

New Jersey officials are scaling down their original estimates of the damage done by the worst flood in the state's history. Flood damage will total about $50 million, according to State Highway Commissioner Dwight R. G. Palmer, who has been named by Gov. Robert B. Meyner as state flood relief co-ordinator. This figure is supported by Army Engineers who tentatively placed New Jersey's damage at $41 million. Original estimates, made during the first few hours after the flood, ran as high as $100 million.

Breakdown of damage is as follows: Public works, $16 million; residential property, $16 million; commercial, $10 million; industrial plants, $4.5 million, with the biggest item a $1.2 million loss at the Riegel Paper Co. plant at Milford, N. J. Railroad damage was estimated at $800,000.

Biggest public works loss was suffered by the Delaware River Joint Toll Bridge Commission. Four of the commission's 19 bridges connecting New Jersey and Pennsylvania were destroyed. The four: From Yardley, Pa., to Wilburtha, N. J.; from Point Pleasant, Pa., to Byram, N. J.; from Easton, Pa., to Phillipsburg, N. J.; and from Portland, Pa., to Columbia, N. J.

Roads to Miami

New expressway, turnpike extension planned to ease metropolitan-area traffic

Two new projects have been proposed to tie in with Greater Miami's traffic plans. One is a 6¼-mi extension of Florida's bob-tail toll road to bring it into the city's highway network. The second is an expressway connecting the turnpike with the downtown district.

The new $3.5-million turnpike extension would change the southern terminus from Hollywood Boulevard in Broward County to the Golden Glades interchange west of North Miami Beach. It would feed turnpike traffic directly into a system of four and six-lane thoroughfares leading into and through downtown Miami and Miami Beach.

Present plans call for the bob-tail turnpike to run 110 mi from Hollywood (north of Miami) to Ft. Pierce. However, this would mean that the stretch of Highway 441 between Hollywood and the Golden Glades interchange would have to carry the bulk of traffic from the Broward toll pike terminus into Miami. And engineers have reported that traffic on that route is now 12,000 vehicles a day and may reach 26,000 a day by 1960.

The Florida Turnpike Authority is expected to give formal approval to the extension plan this week.

• **Expressway project**—The proposed expressway connecting the Florida Turnpike with Greater Miami has been given number one priority in a report issued by the Dade County engineer, the city engineer of Miami Beach, and the director of engineering for Miami. They have recommended elevation of the limited-access route through downtown Miami, using the Florida East Coast Railway's right-of-way for that stretch.

Other parts of the expressway plan include:

• A riverside throughway joining Highway No. 27 with downtown Miami. Spurs would connect with Miami International Airport, the main north-south expressway, and the Venetian and MacArthur Causeways.

• A southwest extension of the expressway system to serve the southern portion of metropolitan Miami.

• Development of arterial surface streets.

• A causeway from NE 36th St. to Miami Beach.

Two other multi-million-dollar highway plans recently were proposed to help ease the traffic burden in the Miami area (ENR, Aug. 11, p. 24). One calls for a highway running down the center of Miami's Biscayne Bay to connect the Florida Turnpike with a proposed new causeway to Key Largo. The second involves construction of a 6-lane highway into Miami from Dania, about 12 miles north.

Toll Bridges to Open Up New Florida Beach Area

A long-discussed toll bridge project to connect Stuart, Fla., with Atlantic Ocean beaches of Hutchinson Island has won approval of the Florida State Improvement Commission.

Plans call for construction of two bridges to span the St. Lucie and Indian Rivers. By joining the island to the mainland the bridges would open up miles of beaches as a new development area.

The Improvement Commission—as one of its final acts before being merged with the new Florida Development Commission has taken steps to speed up the sale of $2.2 million in bonds. The bonds would be backed by tolls.

Bechtel Will Review Feather River Project

Bechtel Corp. of San Francisco has been selected to review State Engineer A. D. Edmonston's engineering report recommending that California construct the $1.5-billion Feather River project.

The project calls for a 730-ft-high dam on the Feather River in northern California and a system of canals to transport water nearly 600 mi to central and southern portions of the state (ENR March 10, p. 21).

The California Joint State Senate-Assembly Committee on Water Problems selected Bechtel to make the independent survey after considering qualifications of nine applicant engineering firms. Bechtel's bid was on a basis of reimbursement of costs plus a 15% fee.

Bechtel estimates that the engineering and economic review of the project will cost from $200,000 to $220,000. The company has guaranteed to complete the project by the end of the year and to keep the state cost down to the $250,000 appropriated by the legislature for the study.

Among the outside consultants who will work with Bechtel will be Walter L. Huber, San Francisco civil engineer; Julian Hinds, Los Angeles civil engineer who is an expert on hydraulics works; A. H. Ayers, Woodside, Calif., construction engineer; Roger Rhoades, Denver consulting geologist, and Carl Heinze, Los Angeles power and electrical engineer.

New Delaware Span

Port authority proposes high-level structure for 3rd Philadelphia crossing

This week the Delaware River Port Authority asked the Pennsylvania legislature for permission to build a 7-lane toll bridge over the Delaware River between northeast Philadelphia and New Jersey.

The Pennsylvania-New Jersey authority recommended that the new high-level structure be of cantilever construction. Cost would run between $44.9 and $53.4 million, depending upon the site selected.

Modjeski & Masters of Harrisburg, Pa., and Ammann & Whitney of New York City prepared the preliminary report and survey of the project for the port authority. The engineers investigated three sites for the new bridge, but further studies will be made.

Sites under consideration are:

• Between Pennypack Park, Philadelphia, and the Pompess Creek area in New Jersey. This is approximately 1¾ mi upstream from the 4-lane, low-level Tacony-Palmyra Bridge, which is considered inadequate to handle the mounting volume of traffic between northeast Philadelphia and New Jersey.

• Approximately 400 ft north of the Pennsylvania railway bridge at Delair, and 2 mi downstream from the Tacony-Palmyra Bridge.

• One-quarter of a mile downstream from the Tacony-Palmyra Bridge. This would connect Devereaux St., Philadelphia, with the southern end of the borough of Palmyra in New Jersey.

• **Bridge system**—The structure would be the third major crossing at Philadelphia (ENR June 2, p. 51). The 29-year-old Delaware River Bridge, which the port authority recently renamed the Benjamin Franklin Bridge, crosses over to Camden, N. J. The $90-million Walt Whitman suspension bridge between Packer Ave., Philadelphia, and Gloucester City, N. J., is now under construction and should be opened to traffic in 1957.

Two bridges exist upstream from Philadelphia. One is the Tacony-Palmyra span. The other is the Burlington, which runs from Bristol, Pa., to New Jersey. In addition, New Jersey and Pennsylvania now are building a $15-million bridge 35 mi upstream near Edgely, Pa., to connect their turnpikes.

Tentative estimates show that the proposed new addition to this bridge system is financially feasible. It is expected to be able to carry 14,400,000 vehicles in 1960; 19,900,000 in 1970; and 22,800,000 in 1978.

Largest Warehouse Built at Low Cost

The largest single-story warehouse in the world has been completed at an unusually low cost for the U.S. Air Force in Palmdale, Calif.

The aluminum-skin structure has over 11 acres of inside storage space, plus nearly six acres of paved area for outside storage. It's 500 ft wide by 1,000 ft long, and 33 ft high from concrete floor to ridge line. In spite of this size, the $1.4-million unit was completed in eight months at a cost $2.84 per sq. ft.

The new building is the first of four such warehouses scheduled to be built by the U.S. Government. Under the auspices of the Air Force, Machinery Overhaul Co., Inc., of Los Angeles, will receive new and used machine tools to be employed for the manufacture of defense products, particularly aircraft parts. The company will rehabilitate the equipment, reship it or place it in storage.

The steel framework of the new warehouse has a purlin spacing of 6 ft 8 in. for the roof deck and a girt spacing of 8 ft 5 in. for the side and end walls. The roof slopes 250 ft in two directions from the ridge line, with a pitch of only ½ in. per ft.

Aluminum roofing sheet, mill finish, in widths of 55.4 in. was applied both as roofing and siding for the entire surface coverage of the building. An extruded mastic strip ½ in. wide by ⅛ in. thick was applied for sealing purposes between sheet surfaces at the side and end laps.

The entire roof area of the warehouse is insulated with glass fiber cemented to aluminum foil. In addition, the building is dehumidified, and an internal static pressure is maintained to prevent any accumulation of dust and moist air.

The warehouse was built by North American Aviation, Inc., for the U.S. Air Force. Architects and engineers were Daniel, Mann, Johnson & Mendenhall of Los Angeles. The prime contractor was North American Aviation, and the general contractor was Vinnell Co., Inc., of Alhambra, Calif. Subcontractor for the erection of roofing and siding was George D. Widman, Inc., Gardena, Calif.

Charles Berkey, Engineering Geologist, Is Dead at 88

Charles P. Berkey, 88, consulting geologist for many of the nation's outstanding engineering accomplishments, died Aug. 22 in Palisade, N. J. He had retired in 1939 as head of Columbia University's Geology Department.

Dr. Berkey first gained national prominence for his part in developing plans for the Catskill viaduct—key element of New York City's water supply system. He was later to make the geological surveys for site determination of such important federal dams as Hoover, Bonneville and Grand Coulee.

His advice on foundation conditions influenced the planning of a number of New York City projects, including the George Washington and Triborough Bridges and the approaches to Lincoln Tunnel.

Dr. Berkey, who took his bachelor's, master's and doctor's degrees and also taught at the University of Minnesota, came to New York in 1903 to join the faculty at Columbia University. He became head of the Geology Department 11 years later. Upon his retirement in 1939, he became professor emeritus.

After his retirement, Dr. Berkey continued his active career as a consultant. He made irrigation studies for Central and South American countries at the request of the State Department. In 1947, his counsel was sought in connection with selection of a site for the United Nations building in New York City.

Among his many honors was Columbia University's James Furman Kemp Medal "for applying geology to the welfare of mankind," which he received in 1948 from President Eisenhower, who was then Columbia's president.

Along with his consulting activities which did much to establish the value of geology in preliminary engineer planning, Dr. Berkey was active in scientific circles. He took part in the Gobi Desert expeditions sponsored by the American Museum of Natural History.

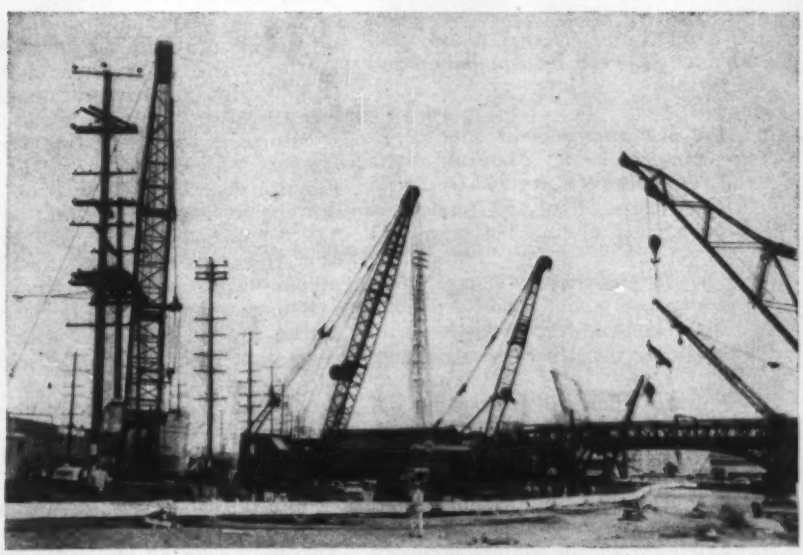
Water Works Project Slated for Buffalo Area

The Erie County Water Authority has decided to relieve a critical water shortage in the Buffalo suburban area by building an $11-million water works plant 30 mi outside the city.

The over-all program, based on recommendations made by Buck, Seifert & Jost, consulting engineers, calls for an expenditure of nearly $30 million over the next 45 years.

At present the authority is negotiating acquisition of a 75-acre tract on the shore of Lake Erie at Sturgeon Point for construction of the pumping station. Sturgeon Point is 19 mi away from the present water works plant at Woodlawn.

Construction on the Sturgeon Point intake, which will call for a 4,000-ft rock tunnel in the bed of Lake Erie, is expected to be under way late next year. The consulting firm has estimated that the intake works will cost $800,000; treatment plant, $1.9 million; main pumping stations, $540,000; transmission mains, $5.8 million, and the distribution storage systems $235,000.



Seattle Gas Pipeline Calls for Teamwork

Six-crane team (three floating, three truck cranes) worked together to handle 500-ft-long, 45-ton section of 12-in., concrete-covered gas pipe that had to be placed in U-shape in Seattle's West Waterway. Pipe is part of Seattle Gas Co.'s program to prepare for natural gas that will be introduced next year. General Construction Co. of Seattle handled job for Engineers Limited Pipeline Co.

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Baltimore Tunnel

Roads Commission awards another large contract, proposes a new extension

The Maryland State Roads Commission has awarded a $5-million contract to Leo Butler Co., College Park, Md., for construction of part of the land section of the Baltimore Harbor Tunnel at the Canton end.

This is the second largest construction award made to date. The largest is a $29.8-million contract with Merritt-Chapman & Scott Corp. of New York City for the underwater section of the tunnel and shafts at each end (ENR, April 7, p. 26).

The $130-million trench-type tunnel under the Patapsco River will run about 6,300 ft and carry two lanes of vehicular traffic in each of its twin tubes.

With 14.3-mi of approaches, it will provide an express route through the southeast and eastern sections of Baltimore.

The Butler contract covers construction of 1,465 ft north from the Canton ventilation shaft, which is 1,250 ft north of the U.S. bulkhead line in Canton. The work includes a 1,025-ft-long underground box section of reinforced concrete supported on piles, and an open ramp section some 440 ft long. Also involved is construction of the foundation and the first floor of the Canton ventilation building (about 250 ft west of the Canton ventilation shaft) together with underground exhaust and fresh air ducts between the foundation and shaft.

• **A new approach**—In another action this week the Maryland State Roads Commission decided to extend the northern end of the tunnel approach for a distance of about 1¼ mi.

The new section will run from the intersection of Erman Ave. and Pulaski Highway (the previous northern limit) to the Baltimore city-county line.

This extension will be paid for out of last year's $180-million revenue bond issue covering the financing of the harbor tunnel, the Chesapeake Bay bridge, the Susquehanna River bridge and the Potomac River bridge.

Extension of the tunnel approach will enable the tunnel project to be tied indirectly with the proposed Northeast toll highway from the Baltimore city line to the Pennsylvania and Delaware state lines.

In addition to the Butler and the Merritt-Chapman & Scott work on the tunnel project these contracts have been awarded:

- The Fairfield land section, awarded C. J. Langenfelder & Son, Baltimore, for $2.2 million.
- An .8-mi section extending west from the terminus point of the above contract to Shell road in Fairfield, including the toll plaza for the project. This was awarded to Langenfelder for $2.3 million.
- Furnishing fans, motors and transmissions for the ventilation facilities at each end of the tunnel. This was awarded American Blower Corp., Detroit, for $954,534.
- Filling and grading for track relocation and other work on the Canton side of the tunnel. This contract was awarded the Langenfelder firm for $71,328.

Bids will be opened Sept. 15 on two more contracts on the Canton side of the tunnel. One will be for construction of a roadway embankment and the substructure of a viaduct from the point where the Butler contract ends to a point .2-mi north of the intersection of Ponca St. and Poncabird pass in Canton. The other contract is for the viaduct superstructure and viaduct paving.

Charles A. Emerson, Leader In Sanitary Engineering, Dies

Charles Alvin Emerson, honored elder statesman of the sanitary engineering profession died last week in Orange, N. J., at 73.

His position in the field of sanitary engineering was perhaps best indicated by a 13-year tenure as president of the Federation of Sewage and Industrial Wastes Association through its formative years.

Partner in the consulting firm of Havens & Emerson since 1940, Mr. Emerson had been engaged on sanitary engineering problems for well over 125 municipalities. During World War II he was responsible for a $25-million expansion at Ft. Knox, Ky.

Before joining William L. Havens in partnership he had been with Gascoigne & Associates and Fuller & McClintock.

Mr. Emerson entered consulting engineering in 1923 after having been chief engineer of the Pennsylvania State Department of Health.

Born in Beloit, Wis., he was graduated from Beloit College in 1903. Two years later he received a science degree in sanitary engineering from Massachusetts Institute of Technology.

He was an honorary member of the American Public Works Association as well as the FSIWA, which he helped found.

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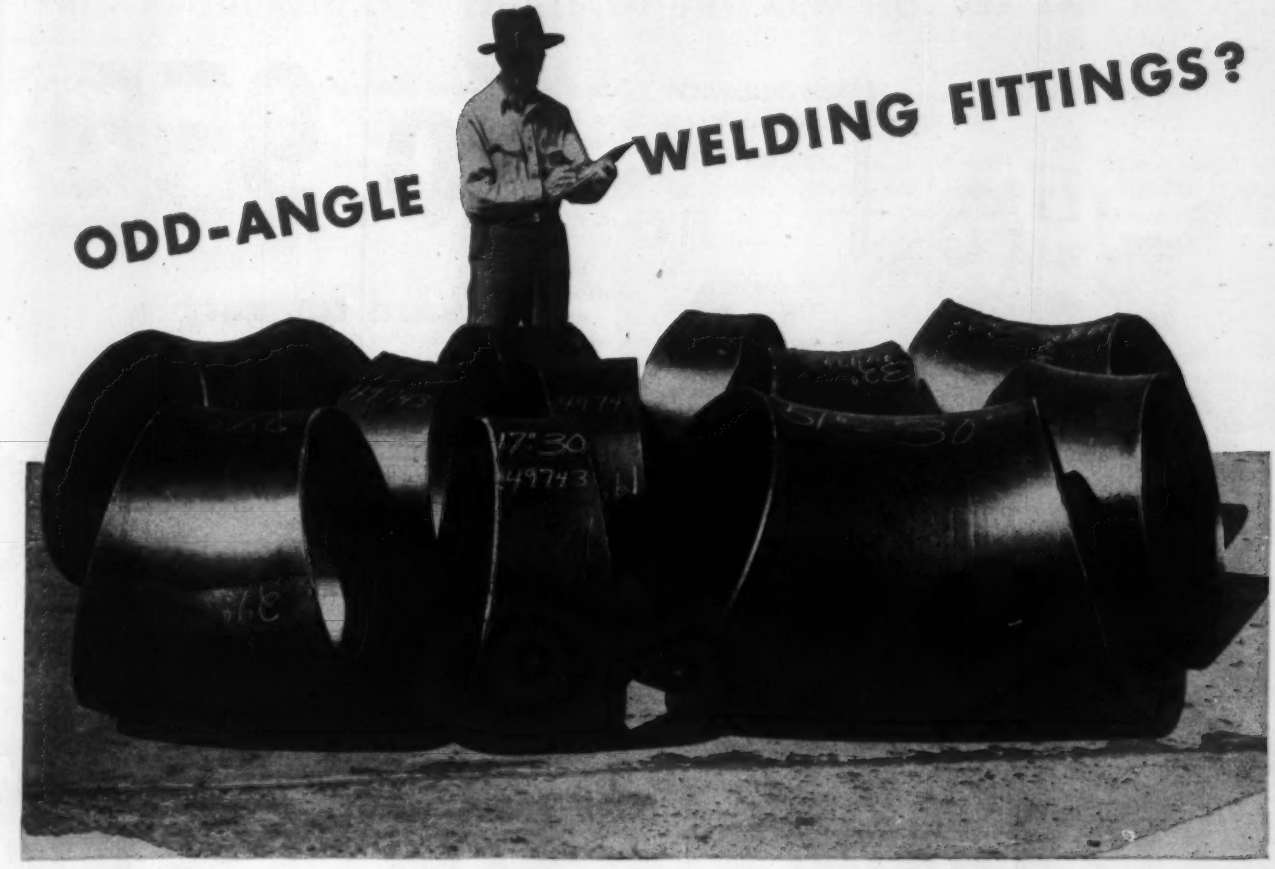

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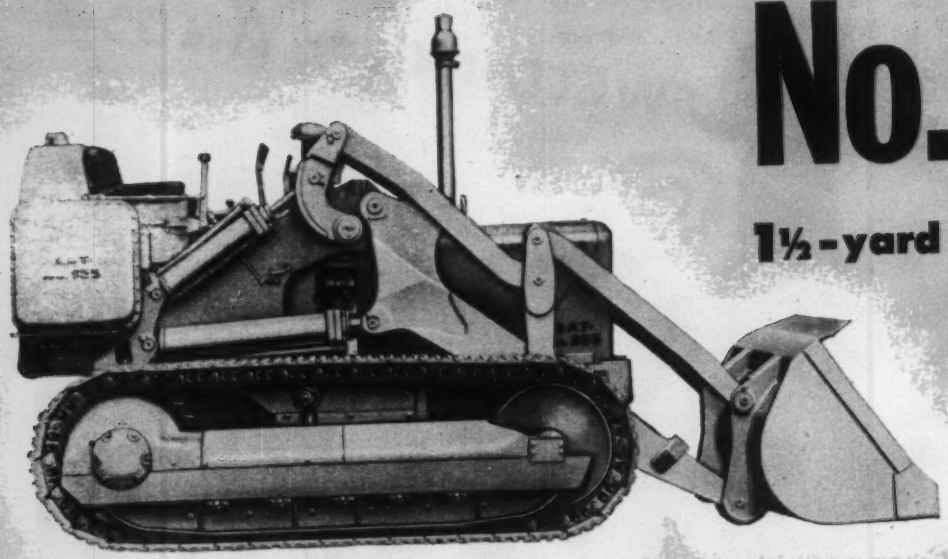

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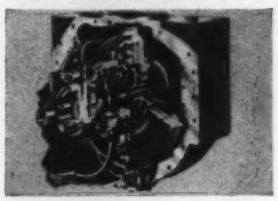

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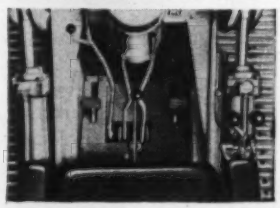

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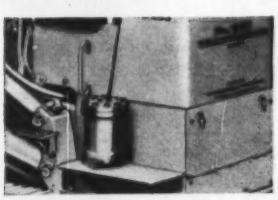
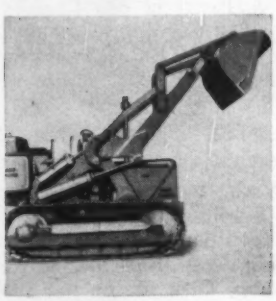
Weight (approx.) lb.	21,480	15,500

TRAXCAVATORS



MODERN HYDRAULIC SYSTEM. Full-flow hydraulic system filter protects moving parts against abrasive particles in fluid. Filter handily located for easy replacement of element.

Hydraulically balanced vane-type pump insures delivery of full volume and pressure of oil for thousands of hours. Operating valves in tank provide maximum protection against damage and dirt. Closed hydraulic system—no vents or breathers—prevents entrance of dirt.



HIGH REACH. Plus strong box section arms for rugged service. Box-type cross brace prevents twisting or bending.

PLENTY OF POWER. Power is ample to "bury" the bucket and provide fast lifting action and positive dumping under all load conditions.

BALANCED UNITS for BIGGER PROFIT!

Designed from the ground up as excavating and loading machines, these two new CAT*-built Traxcavators* are balanced for bigger production at lower cost. Built and backed by *one* manufacturer, they give you all the advantages of single manufacturing responsibility. With practical, advance-design features, they're engineered to *outproduce* ordinary tractor-shovels of the same capacity. You'll find these units the handiest tools in your line-up. Get the money-making picture from your Caterpillar Dealer—ask for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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NEW BIG-PRODUCTION TRAXCAVATORS

ANOTHER EXAMPLE OF CATERPILLAR LEADERSHIP IN ACTION

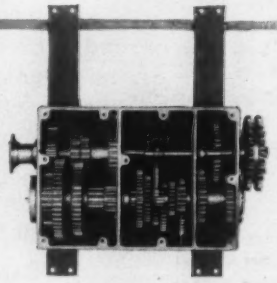
"This Cleveland 140 is a diggin' fool"

SO SAYS OWNER, Frank C. Heckman, Excavating and Trenching Contractor of Santa Fe, New Mexico. His Cleveland is here shown digging trench for the installation of sewer, water and gas lines in a new building project in Santa Fe. Each house requires a total of about 300 feet of trench, all 20 inches wide but varying in depth down to 4 feet.

Heckman does all the trenching for this construction company which erects about 200 buildings yearly in Santa Fe. In addition he does many scattered trenching jobs throughout the Santa Fe area, much of it for utility companies.

He's sold on his Cleveland's speed and maneuverability for digging short runs of trench profitably and on its rugged dependability for turning out high daily production on pipeline and similar big jobs.

This famous Cleveland multi-speed transmission *has no equal.* It provides 12 individual crawler speeds for each of 4 digging wheel speeds—gives you the *right* speed and power *combination* for *every* trenching job *condition.*



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CLEVELAND

Portland Bridge

Bid date scheduled for Willamette River span

Bids will be opened Sept. 29 for the initial phase of construction on an $8-million Willamette River bridge in Portland, Ore.—the first bridge to be built in the mid-town area since 1926. The first contract, worth an estimated $2.3 million, will involve construction of four main piers.

The project, replacing an obsolete bridge completed in 1903 at Morrison St., will have a main double-leaf bascule span providing 220-ft horizontal clearance. The six vehicular lanes and sidewalks will be 90 ft wide.

Construction of the piers probably will be done by open cofferdam method, since the deepest water at one pier site is 57 ft. Two slack water seasons, roughly October to April, are being allowed for the work. The bascule piers will have two 10-ft-thick walls each instead of a single 30-ft-thick pier at each spot. This will reduce eddys at high-water periods and minimize river navigation hazards.

The project is being linked to new approach construction for the upstream Hawthorne St. Bridge. The second phase bid call, slated for the early part of 1956, will provide alternates to permit bidding on separate or combined construction of the east bank traffic separations. The east approaches will carry bridge traffic over the Southern Pacific Railway mainline and several streets.

Final bids for the Morrison St. span will be called late in 1956 and will include one contract for the west approach and one for the bridge superstructure. The County Board of Commissioners ordered the west approach plans to be modified from originals to allow future construction of a multi-tiered parking structure that will utilize the five-block-square air space above the west bank approach pattern.

The new bridge, designed by Moffat, Nichol & Taylor of Portland and Sverdrup & Parcel of San Francisco, will be the first to go up in the downtown area since the Burnside and Ross Island bridges were built 29 years ago.

Bids Due on 2 Dam Projects

The Corps of Engineers of Walla Walla, Wash., has called for bids on exploratory drilling at the sites of two hydroelectric dam projects in the Pacific Northwest. Bids for the work at Ice Harbor Dam site on the Snake River near Pasco, Wash., are due Sept. 8. Proposals for work at John Day Dam on the Columbia River near Goldendale, Wash., are due Sept. 9.

CAST TO LAST 100 YEARS

The name "CLOW" cast on the face of cast iron pipe is your guarantee of high quality. This distinctive "autograph" marks the precise, modern production methods, and the advanced, exacting control of quality employed by James B. Clow & Sons, Inc., to assure you the finest cast iron pipe . . . pipe cast to last 100 years.

For more than 75 years waterworks operators and municipal officials have looked to Clow for high quality and good service. Clow cast iron pipe exceeds the physical requirements of all currently approved specifications.

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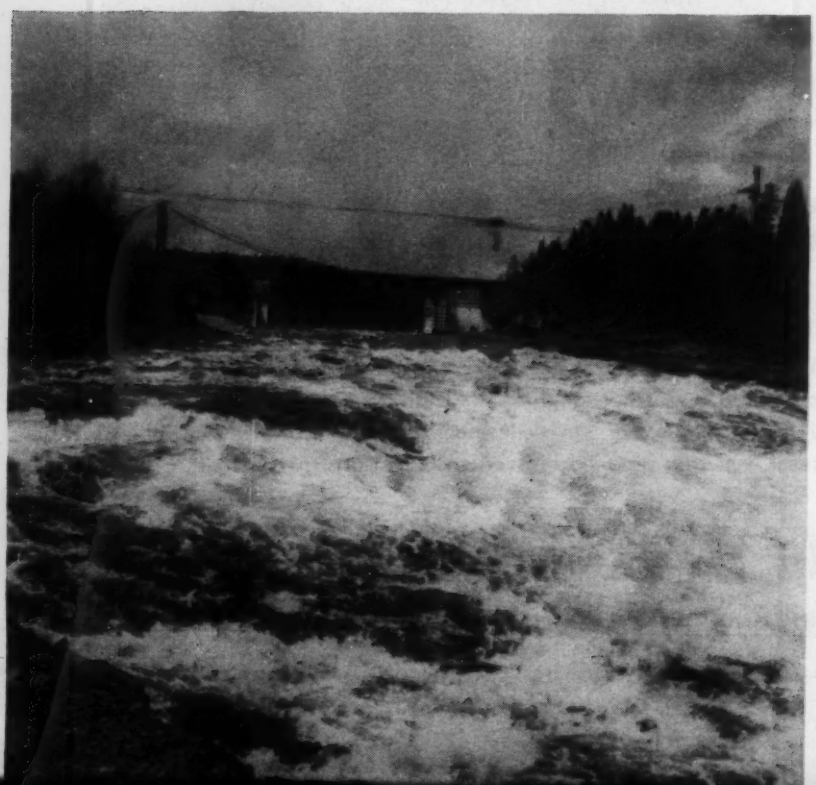
DRILLING JUMBOS are carried by trucks to face of top heading of the Stornorrfors tunnel, Sweden's biggest. The top heading represents 45% of the total 3,875-sq-ft section, the remainder to be taken out in two benches.

Swedes Make Rock Tunnel History

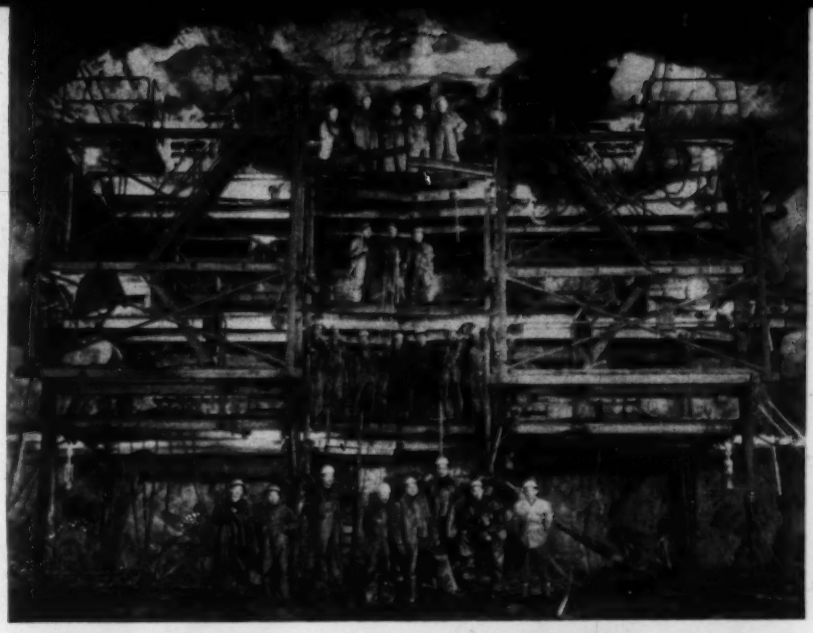
Latest projects in a continuing underground program—two hydro plants and an air raid shelter—mark new advances in sizes of tunnels and speed of driving

Waldo G. Bowman
Editor
Engineering News-Record

STOCKHOLM – The Swedes, who have a well-proved faculty for identifying themselves with the making of superior products–special steels, fine glass and top-notch wood pulp, for example–are in the process of extending their fame to a new one–rock tunneling. Swedish prowess in this respect is currently on view on several outstanding projects–particularly two hydro plants in the north of the country and an air raid shelter-garage in Stockholm–and a visitor fortunate enough to see all three will not only be exposed to history-making in the rock tunneling business, but will find some



SWEDEN'S RIVERS carry lots of water. The dam under construction in the background (left) will divert this flow of the Ume River into the underground power plant of the Harresele hydro project.

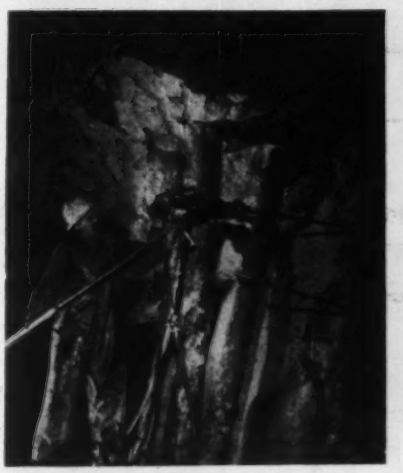


THE CREW THAT SET A RECORD lined up (right) on the three-platform jumbo from which its twenty drillers operated to give its muckers and haulers enough yardage for an advance of 515 ft in the 1,410-sq-ft top heading of the Harresele tunnel during a single month.

of the other aspects of the projects almost equally worthy of note.

Sweden's underground excavations in rock, if not yet quite as Swedish as smorgasbord, are nevertheless on a common level with this other Scandinavian hors d'oeuvre in variety of form and finesse of execution. Moreover, they are beginning to attract the same kind of world-wide attention as a result of the success of the procedures by which they are constructed —procedures which the Swedes, not too surprisingly, have labeled "The Swedish Method."

Except for this slight bit of promotion, however, the Swedes do not make much of a point of the remarkable manner in which their underground construction is advancing in both dimension and speed. Swedish modesty in this regard may be influenced by the fact that it is a U. S. contractor, Morrison-Knudsen, who holds the world's record for the largest single "room" yet excavated underground in rock—the turbine-generator hall of Canada's Kemano hydro project, 700 x 82 ft, and 135 ft high from the bottom of the tail race shafts to the roof (ENR Nov. 13, 1952, p. 31). Still, Sweden has at least four generator rooms as high or higher than Kemano's, even though none has more than half the area and volume. And when it comes to rock tunnels, those



ONE-MAN ROCK DRILLS are the accepted tools of Sweden's tunnelers. These views in the Harresele tunnel show the usual pneumatic pusher leg mounting (above) and the drill (right) equipped with an adapter for rock bolting operations.

MECHANICAL SCALING PLATFORMS promote speed and safety in big Swedish tunnels. At Harresele (left) the scalers are raised to their work by a fork-lift truck. At Stornorrfors (right) they ride on the end of a boom mounted on the rear of a normal truck chassis.

. . . Why Swedes go underground

in Sweden far surpass in size any known to exist elsewhere in the world.

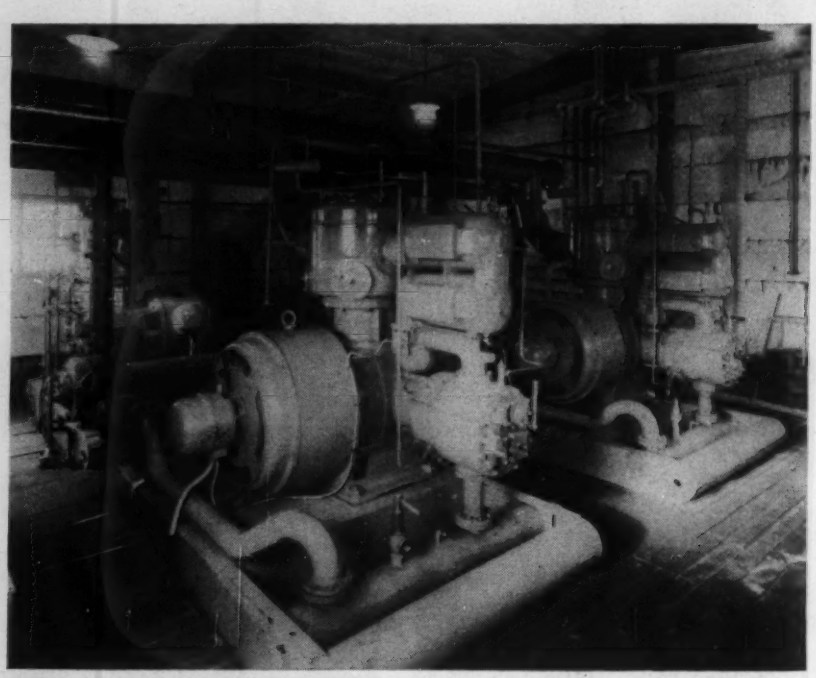
• **Making new records**—Most "large" tunnels, before Sweden began tackling underground construction in earnest less than a decade ago, had cross sectional areas on the order of 1,500 sq ft. The latest tunnel in Sweden will have a cross section of 3,875 sq ft, and several others range from 2,200 to over 3,000 sq ft.

Naturally, also, tunnels with such cross sections as these lose none of their significance when measured by cubic yards of excavation required. Extending only 2½ miles for example, the 3,875-sq ft tunnel will necessitate removal of just under 2 million cu yd of rock. The only known approach to this scale of concentrated underground excavation was for the oil storage facilities at Pearl Harbor, Hawaii, which involved the removal of 1½ million cu yd to form twenty tanks 100 ft in diam and 250 ft deep (ENR Dec. 27, 1945, p. 61)—so Sweden would seem to have established another world's record in this respect.

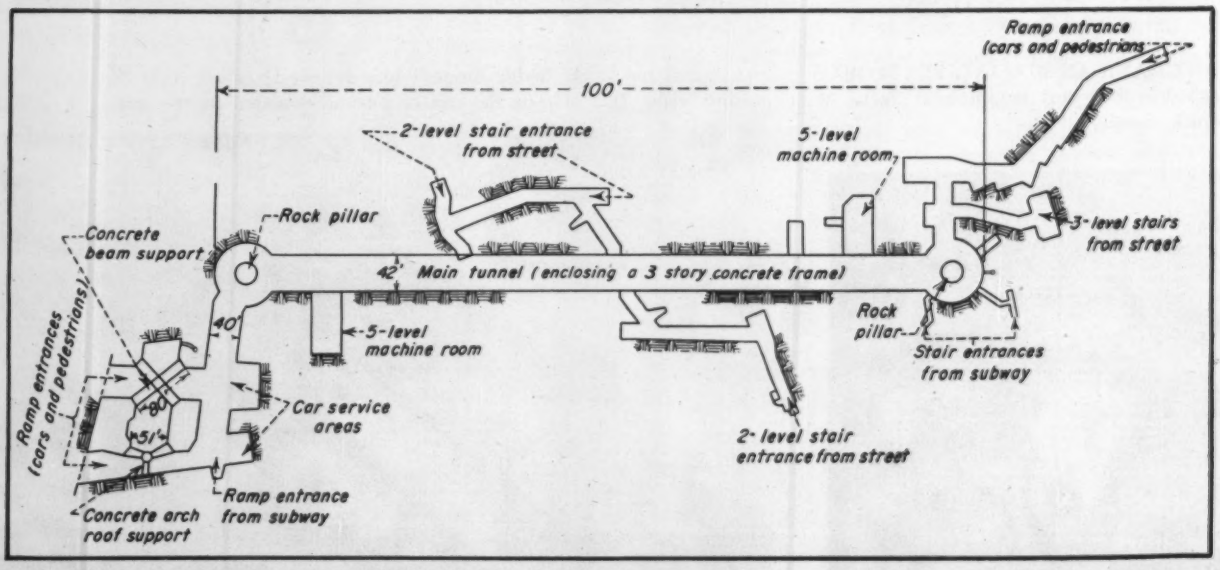
As a matter of fact, the recent history of rock tunneling in Sweden reveals a continuing series of records. Tunnels with the biggest bore have been completed only to be exceeded by even bigger tunnels. And records for fast driving and mucking have been set only to be beaten on the next job —or the next month on the same job. For example, on another of Sweden's current projects, a top heading of 1,410 sq ft was advanced 492 ft in March to establish what appeared to be a new record, only to have the advance in May go beyond it to 515 ft. Drilling, blasting and mucking 40 cu yd of rock every hour for a month can only be regarded as a history-making accomplishment.

• **Reasons for success**—When one searches for an explanation of this success with rock tunneling in Sweden, a number of possible reasons become apparent: Sound granite rock—good for tunneling without roof supports—exists relatively near the surface over most of central and northern Sweden. Experienced tunneling crews are available, led by foremen trained in Sweden's iron mines along with good equipment and know-how.

But perhaps most significant is the opportunity that is presented to do the same kind of job again and again as Sweden puts more facilities underground in an attempt at some semblance of safety in wartime. All over the world contemplation of the results of atomic bombing has led to talk of subsurface locations for vital installations, but nowhere is action more prevalent than in Sweden.



FOUR SKID-MOUNTED COMPRESSOR UNITS simplified and speeded up compressor house construction at Harresele by eliminating the need for foundations. Enclosure is a welded steel frame and precast light-weight concrete wall and roof units.



STOCKHOLM'S BIG AIR RAID SHELTER-GARAGE resembles a leviathan-size rabbit burrow. With its main tunnel and numerous entrance adits it presented an unusual underground excavation problem. A three-story concrete frame built in the main tunnel increases its car-parking capacity in peacetime and its human occupancy capacity for wartime.

CONCRETE ARCHES support roof of big main entrance to Stockholm air raid shelter-garage. The area to the left will accommodate a filling station for the cars that will use the shelter in peacetime.

Moreover, while the Swedes have their war scare as their prime motivation in going underground – and frankly say so—they do not overlook the fact that for certain facilities there are economic and technical advantages as well. For example, storing gasoline in underground tanks reduces evaporation losses. Atmospheric control and uniform lighting are more easily supplied in underground factories. And setting turbines deep underground makes shorter penstocks possible and also furnishes some of the same operating advantages obtained in underground factories.

All these factors had their influence in creating a huge and continuing underground construction program, which has provided Sweden's engineers with unprecedented design opportunities and its rock tunnelers with the types of steady jobs on which they can perfect their techniques. Taking only the country's public power plants for example, three-quarters of them, representing a capacity of 1 million kw, are being put underground to the tune of 10 million cu yd of excavation. Some of the features of this underground program and some of the installations have been the subject of previous articles in these pages (ENR Dec. 9, 1954, p. 33; Dec. 16, 1954, p. 41; and Jan. 6, 1955, p. 33). But since then other projects have gained the limelight, and the opportunity to see and report on them was not to be missed.

JUNCTION of main tunnel and one of the entrance adits in the Stockholm air raid shelter-garage. At left, the concrete frame in the main tunnel is under construction.

• **Hydro country**—As one travels northward from Stockholm (passing up for the moment the underground air raid shelter there) and heads for the Arctic Circle country, the characteristics of terrain and geology that determine the nature of Sweden's power supply quickly become apparent. No oil fields or coal deposits are encountered —solid granite is not a good habitat for them—but there are numerous rivers each discharging large annual volumes of water into the Baltic Sea. They run from northwest to southeast, paralleling one another in an amazingly regular pattern at no more than 25 mile intervals, and separated, for the most part, only by pine and fir forests. Moreover, in its course from the mountains on Sweden's western border to the sea, each of these streams has its flow slowed from time to time by lakes, so that it presents a series of natural storage reservoirs joined by rapids.

This is perfect hydro country, made further adaptable to the purpose by the sound granite or gneiss rock through which headrace and tailrace

(*Continued on page 40*)

EIMCO TRACTOR — **8th in a Series**

Digging in a sedimentary sandstone this Eimco Tractor with loader-excavator attachment is removing overburden at an extremely low cost, see story below on how to

Strip Overburden—Economically

Mining companies have found that **Eimco 105 Tractors with Loader-Excavator attachments can be successfully employed in stripping operations at a savings in cost per yard moved.**

The job pictured above could be stripped with tractor-drawn scrapers or with Eimco loaders as shown. Both types of equipment have been employed with the results shown below:

4—10-13 yd. scrapers — load, travel to dump and return at 12 min. cycle each. Average 12 yds. per trip or 240 yds per hour.

1—Eimco 105 Excavator with 4 trucks of 8 yd. capacity load, travel, dump and return at 6.42 min. cycle each or 299 yds. per hour.

Cost on equipment involved is 25% cheaper on the Eimco 105 Excavator method yet production is 25% more. The cost of scraping is charged out at 21.6c per yard, the cost with the Eimco and trucks is charged out as 12.2c per yard.

Extra advantages obtained with Eimco equipment are in low maintenance, easy operation and in being able to load selectively.

Selective loading is extremely important when the ore body lies in uneven strata and the overburden must be moved without disturbing the valuable ore.

There are many exclusive features in the Eimco 105 Tractor which make it the most "talked-about" tractor on the market today. Steel castings, steel forgings and heavy fabricated steel parts are used throughout. The operator sits up front where he can see. Simple controls make the toughest jobs easy for the operator. Independently controlled tracks give the Eimco Tractor a maneuverability unknown in any other tractor.

See the Eimco Tractor — compare it piece for piece with any other tractor. You will agree that the Eimco is the finest tractor on the market.

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A.

As a pusher. The Eimco Tractor operator is able to judge distance without error — the extreme maneuverability of the Eimco makes it ideal for these jobs.

Eimco Tractor with Excavator attachment loading overburden (see story previous page.) Loading time for 8 yard trucks is 1 min. 25 seconds to 1 min. 40 seconds. Length of haul approximately one quarter mile. Damp weather has increased weight of sand to 3600 pounds per yard.

Large pieces of trap rock (appr. 9,000 lbs. in bucket) are loaded easily by the Eimco Loader-Excavator. The operator has placed one or two buckets of loose material in the truck before loading the big rock.

Eimco Bulldozers even out clay fill dirt. Quick reversals and up-front visibility on Eimco Tractors permit following the load and doing a most efficient job.

An Eimco loader digs in for a full bucket, trams 50 feet to cast it overhead into the canyon and back to the face again. Two trips with full bucket a minute for a rate of 180 yards per hour while traveling more than two miles in shuttle service.

Two Eimco Bulldozers — one a cable controlled unit with angle blade and the other a hydraulically operated unit with a straight blade. These 37,000 pound tractor units team up to make short work of leveling.

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B-137

. . . Swedish tunnels—fastest and biggest

tunnels and underground power plants can be excavated with comparative ease.

One of the rivers of this north country is the Ume, which has its headwaters at the Arctic Circle and its mouth some three degrees farther south near the city of Umea. And, typical of these hydro rivers, it has a large flow, steep gradient and a route through a lake, whose outlet has been controlled so that an effective regulating reservoir of 455,000 ac-ft is provided.

The Ume, however, is special in that it is the site of Sweden's two current hydro showplaces—the Harresele project and the Stornorrfors project. Harresele is privately owned [by a power company and two timber companies] and is the scene of the fastest tunneling job. Stornorrfors is a Swedish State Power Board project, and boasts the tunnel with the largest cross section. And both projects contain other features of interest. Harresele is just upstream from Stornorrfors, and both are just above where the river widens out to become a navigable waterway.

• Modest above ground, big below—The Harresele project, like most Swedish hydro jobs, is a modest appearing construction operation above ground. There is a diversion dam (and the concrete plant and cableway to build it), a bridge (of suspension type) to give access to both sides of the stream, a compressor house, shops, offices, and, largely hidden in the forest, a workers' village. The only other thing visible is a tunnel portal from which powerful trucks laden with rock emerge and into which the same trucks, empty, soon disappear.

Here is the tipoff that the real job at Harresele is below ground, yet these top-side facilities have their vital role, too. The dam is a simple structure of 92 ft maximum height, mostly of concrete, although an earth dike at one end comprises nearly one-third of its total length of 1,160 ft. A spillway near the center of the dam is closed by three gates—two of up-moving tainter type to pass flood waters and one of down-moving segment type for discharging ice and debris. The normal concrete gravity section of the dam is also interrupted by three 35 x 50 ft tainter-gate-controlled intake openings to the penstocks that lead to the subterranean powerhouse. These are 23 ft diam steel pipes embedded in concrete in vertical shafts excavated in the rock. Just downstream of the intakes, and thus approximately over the powerhouse, is the transformer station which is being roofed with a 40 in. thick concrete slab on top of which 10 ft of rockfill will be placed for bomb protection.

On the dam itself, between the intakes and the spillway, a building housing offices and staff quarters will be erected and connected with the underground powerhouse and control room by two elevators. Beneath this building a notch in the top of the dam will accommodate a 25,000-log-per-hour timber chute, with a floating section upstream leading to a structure that will run along the right river bank for 2½ miles before crossing the stream on a suspension bridge to a discharge point below a waterfall in the river. Near here is also the outlet of the project's discharge tunnel, so it is the height of this lower falls plus that of another at the damsite that make up the 180 ft head under which the power plant operates.

It is this discharge tunnel, 49 ft wide, 59 ft high and 11,154 ft long, together with the underground power plant, that presents the major construction task at Harresele and lends the project its current fame. The powerhouse, which will contain three 88,000-hp Francis turbines connected to 75,000-kva generators, is for all practical purposes an enlarged extension of the tunnel, being 52.5 ft wide and 295 ft long, but with a height of 108 ft—or 140 ft if the distance to the bottom of the draft tubes is taken into account. With appurtenant works—penstocks, draft tubes and a 52,400 cu yd underground surge chamber—excavation for the powerhouse adds up to the respectable total of 187,330 cu yd. But it is the discharge tunnel, with a volume of 1,113,500 cu yd, which lifts the required excavation into really big figures, and which has led to the setting of new records for fast tunneling.

• Fastest tunneling—The 2,691-sq-ft section of the Harresele discharge tunnel is being attacked with a full-face top heading of 1,410 sq ft, after which the remaining 26 ft high bench of 1,281 sq ft will be removed by wagon drilling and blasting.

Top heading work is proceeding from both ends. Access at the lower end is through a 79-ft deep open cut, which will eventually carry the discharge from the tunnel back into the river. The upper end access is through an adit in the vicinity of the power plant, so placed that it can later form a part of the surge chamber and also serve as an air shaft.

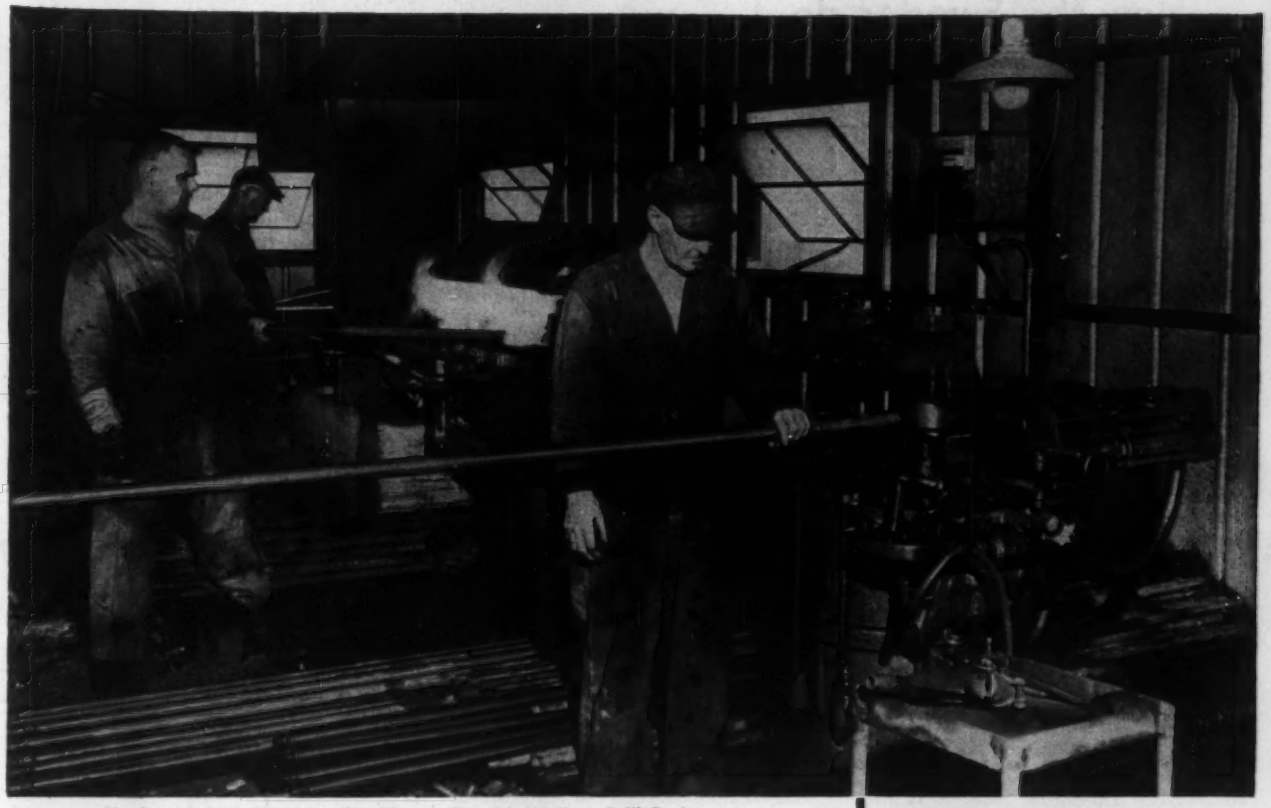
Operations started in June, 1953, focused on a completion date, for the top heading, in February, 1956. According to J. Jorgensen, the engineer in charge, the tunneling crews steadily stepped up their output until in March of this year one heading was advanced a total of 492 ft to set a new Swedish, and thus probably a world's, record for a tunnel of this size. The best week of that month witnessed a 142 ft advance, also a record, and representing an average advance per 24-hr round of drilling, blasting and mucking of 23.6 ft.

But these records did not stand for long. In April, for the entire month, this average advance per round was raised to 24 ft. In May, the monthly advance was 515 ft, and then in the first week of June a new weekly record of 145 ft was set. There is confidence on the job that the last has not been heard of new records, particularly for the monthly advance.

• How the tunnel is driven—The tunneling operations which have produced these records at Harresele are based on three working shifts per 24 hours, one for drilling and two for mucking and transportation of the broken rock. Drilling is performed at each face from two, three-platform jumbos of light tubular construction joined together side by side by means of detachable girders. At the end of the drilling shift the girders are removed and the jumbos pulled back out of the way by one of the big haulage trucks. Actually the jumbos are carried, for the trucks back in under them and pick them up. Jacks in the jumbo legs lower the weight onto the truck body, and then lift the legs to clear the ground. The half-tunnel-width jumbos are parked tandem, leaving the other half of the tunnel free for the hauling trucks to pass.

The crew at each face totals 31 men, including the foreman, 20 drillers, the operators of the mucking equipment and the scalers who remove loose rock from the tunnel sides and roof. Each driller operates his own drill, a light (less than 50 lb) machine equipped with a pneumatic pusher, which not only reduces fatigue to a minimum, but permits the drill to be left unattended for short intervals while the driller readies his steel changes or does other auxiliary jobs. Cleats on the timber floors of the jumbos afford resting places for the bottom of the pusher leg which can be moved easily and rapidly after its 4 ft 3 in. feed length has been used up.

Drilling is done with ⅞-in. alloy steel rods, having tungsten-carbide tipped chisel bits. The difference in length of the several rods required for each hole is 5 ft 3 in., so that four changes of steel (after the initial rod has been



Blacksmith Billy Watkins shanking a Crucible Hollow Drill Rod.

they're using Crucible Hollow Drill Rods on the Boston Tunnel Jobs...

400-feet below the city of Boston, two seven-mile tunnels are being cut through solid rock. Replacing century-old mains, the tunnels will bring water from Quabbin Reservoir, 70 miles away, and remove drainage from the city.

On this job, like most other tough ones, Crucible Hollow Drill Rods are in daily use. For experienced construction men *know* they can depend upon Crucible Hollow Drill Rods for top performance at *lowest cost per foot of hole drilled.*

That's because they are made to *tool steel* standards by the nation's leading producer of *special steels.* So for *extra* dependability on *all* your drilling jobs specify Crucible Hollow Drill Rods. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

120-foot-high head frame used to raise and lower men and materials in excavation shaft. Morrison-Knudsen-Kiewit-Maney City Tunnel Extension Job, Boston, Mass.

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

used) are required to get the necessary depth of hole for the daily 20 to 24 ft advance.

For each round, a total of 153 holes is drilled, so that the drilled footage per round has varied from 3,000 to 3,600 ft. About 1,200 cu yd of broken rock is obtained per round with an explosive consumption of 1.56 lb per cu yd. A 50% nitroglycerine dynamite is used. The "cut" is blasted with the electric short-delay method, and the remainder by half-second delay electric detonators.

Average times for the different operations during the drilling shift have worked out about as follows:

	hours
Setting up time	1.5
Drilling	3.5
Charging	1.5
Ventilation	0.5
Moving shovel in	0.5
Total	**7.5**

• **The Swedish Method**—The drilling operations at Harresele, described above, follow what is called the Swedish Method. Used on practically all Swedish tunneling jobs, it is the result of an unusually close working relationship between the Swedish tunneling fraternity and a manufacturer of compressed air equipment, the Atlas Diesel Co. It is Atlas Diesel's pneumatic pusher-mounted light-weight one-man rock drills, along with tungsten-carbide tipped drill steels (which Atlas does not make but markets as sole agent for the Sandvik Steel Works) that forms the core of the Swedish tunneling method.

But Atlas Diesel (whose name is in the process of being changed to Atlas Copco since it no longer manufactures diesel engines, and Copco is an abbreviation for compressed air company) goes further than supplying equipment by acting—and being welcomed—as a tunneling consultant. Atlas has a project planning department and even operates a test mine directly under its factory, where both tools and full-scale tunneling procedures can be tried out. So many holes have been drilled in the walls of these underground workings that they resemble the bottom of a sieve. And it was here that the genesis of the Swedish Method occurred.

The light-weight drills equipped with pneumatic pushers were first used about ten years ago on the Jarpstrommen hydro project for the city of Stockholm, and the ability to move them easily and to mount them any place on the jumbo platform or the tunnel bottom was found to be very advantageous. Then on the next big tunnel, that for the Hjalta hydro plant, an additional new development was added—the use of drill steels with hard metal bits. It was found that the drill steel lasted longer and thus that fewer were required. Combining these two developments with redesigned movable drilling platforms improved Swedish tunneling, and the resulting working procedures came to be called the Swedish Method.

Advantages claimed for the Swedish Method—naturally by Atlas, but also by practically all Swedish tunnel men—include the following: Only one man is required to move and operate the rock drill; the light drill reduces fatigue on both operator and drill rod; labor, equipment and spare parts costs are lowered; lighter, more mobile jumbos can be used; the pneumatic pusher with long reach reduces the number of drill steel changes; the tungsten-carbide tipped bits permit a more constant drilling rate, and with the hard metal tips, holes can be started with smaller diameter steel.

That Swedish tunnel men believe in these advantages seems to be attested by their widespread adoption of the method over the past decade including their use of it on all of the country's recent big tunnels—3,100 sq ft Harspranget (ENR March 26, 1953, p. 77); 2,240 sq ft Kilforsen (ENR Dec. 16, 1954, p. 41) and now 2,700 sq ft Harresele and 3,875 sq ft Stornorrfors.

• **Big equipment also helps**—Success in driving such large tunnels is also greatly aided by the ability to use big "outdoor" size mucking and hauling equipment—mostly of American manufacture. At Harresele a 2½ cu yd electric shovel does the mucking, eighteen 15-ton Euclid trucks are used for hauling and a 140-hp bulldozer-equipped crawler tractor does the cleanup of the shattered rock. Also, so that the trucks can operate with "outdoor" efficiency, the bottom of the Harresele tunnel is paved with waterbound macadam and in some places with concrete. The most extensive concrete sections are at the portals of the tunnel, where the slabs are also electrically heated to reduce the ice hazard in winter.

Other interesting aspects of the Harresele job include the use of a scaling tower mounted on a standard fork-lift truck from which the scalers use light (18 lb) non-rotating rock drills to remove the loose rock; a roof bolting detail in which a perforated pipe is inserted over the bolt before the hole is grouted, thus raising the holding power of the bolt several times by virtue of increased bond; and the use of skid-mounted compressors (four of 750 cfm in each compressor house) to eliminate the cost of special mountings and foundations.

• **Biggest tunnel**—Whereas speed of tunneling is the feature of the privately owned Harresele project, size is the outstanding characteristic of the government-owned Stornorrfors project only a few miles farther down the Ume River. The Harresele tunnel is definitely in the large category being proportioned for a water flow of 17,800 cfs, yet a 30,000 cfs flow is the requirement of the Stornorrfors tunnel, which has a cross section of 3,875 sq ft and is thus probably the biggest tunnel yet undertaken anywhere. It is also noteworthy that the Stornorrfors power plant will contain three and have space for four 130,000-kw generators, believed to be the world's largest, and they will be turned by 170,000-hp Francis turbines, operating under a 241-ft head. The underground room required for this equipment measures 60 ft wide by 400 ft long and is 146 ft high from the bottom of the draft tubes to the roof.

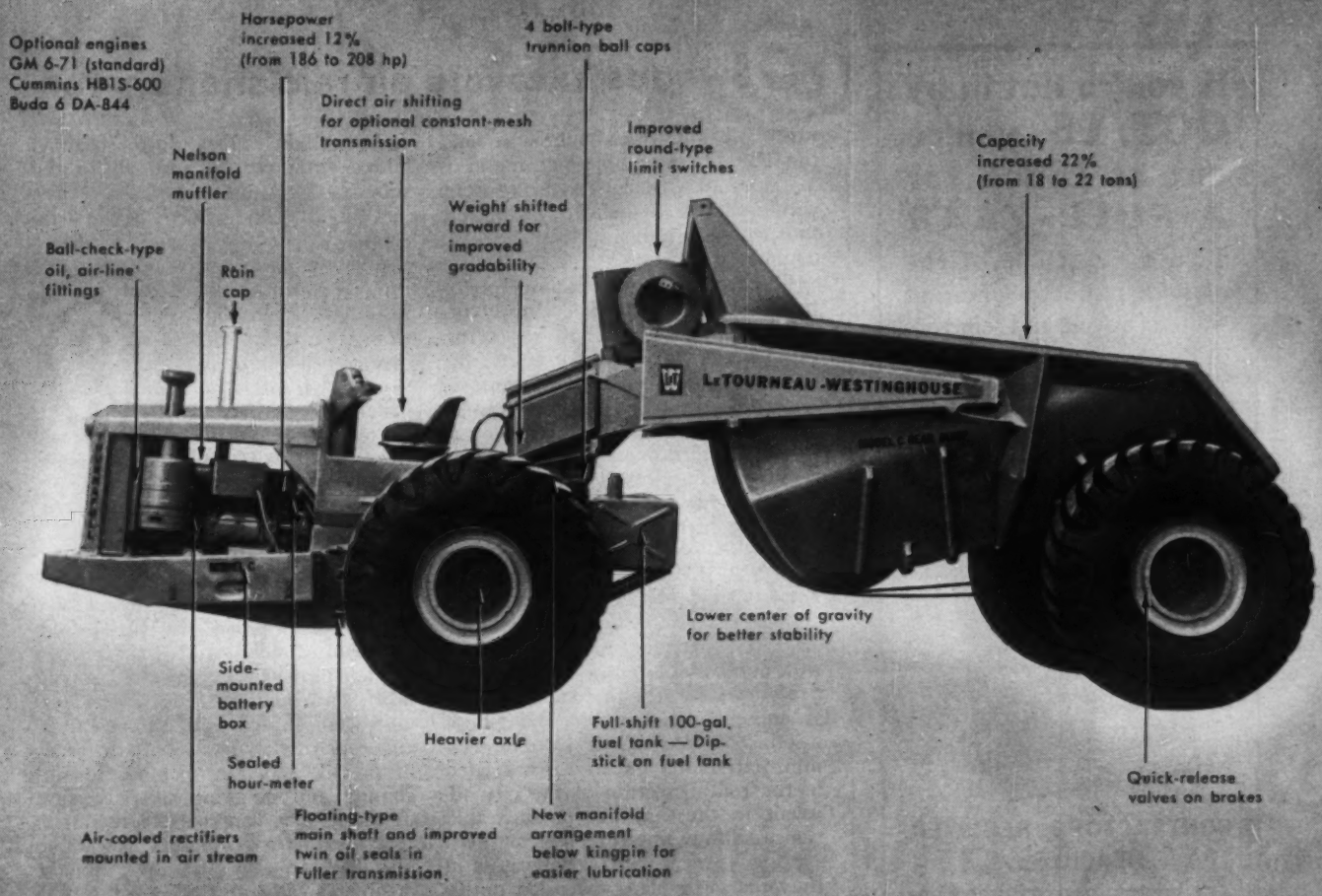
Topside construction at Stornorrfors is also reasonably impressive for, in addition to the diversion dam, there is a 1.9 mile headrace canal, which will require 2.6 million cu yd of excavation, about half rock and half earth. A tailrace canal will require another 1.3 million cu yd of earth excavation.

There will also be a 3-mile-long log chute, and in the drained part of the river bed, between the diversion dam and the outlet of the tailrace tunnel, a half-dozen or more artificial lakes will be created by the construction of low submerged weirs.

As at Harresele it is the discharge or tailrace tunnel at Stornorrfors that is the news-making element. Since its 3,875 sq ft cross section extends for 2½ miles, the volume of rock to be excavated is 1.9 million cu yd, and when the powerhouse is added in, total underground excavation exceeds 2 million cu yd.

The discharge tunnel, which is 53 ft wide and 77 ft high to the top of its arched roof, will be excavated in three stages according to T. Goransson, the engineer in charge—first a top heading of 1,720 sq ft, followed by two benches of about 1,100 sq ft each. The heading will be driven in its entirety before benching starts. Work on it is now under way from both portals and from a central adit.

Drilling at Stornorrfors is being done with the light-weight pusher-leg rock drills and tungsten-carbide tipped rods, which drill a total of about 4,000 ft in 172 holes for each round from a three-level jumbo. The ad-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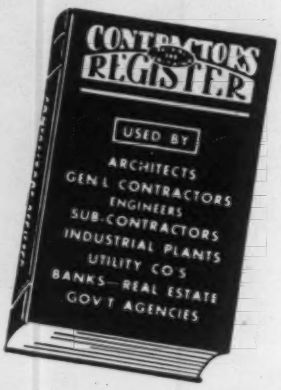

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. . . Swedes excavate air raid shelters too

vance per round is about 21 ft, and the theoretical volume per round is 1,360 cu yd. Mucking is being done with 3-yd and 4-yd shovels, while 20-ton trucks are being employed for hauling.

Broadly, these top heading operations follow the pattern already described for Harresele. As they progress and when benching work starts, the setting of new records for volume of excavation removed from rock tunnels is a definite prospect. In the meantime, Stornorrfors has already made rock tunneling history by having a cross section larger than any that has yet come off the drawing boards.

• **Air-raid shelter-garage**—While it is not in the same spectacular rock tunneling class as the hydro tunnels, an air raid shelter in Stockholm, which will double as a parking garage in peacetime, is nevertheless an underground excavation of note. Being built by the National Civil Defense Administration and the city, it is located in the central section of the city adjacent to the terminus of the rapid transit subway line from the southern suburbs. And since this subway is in the process of being extended northward under Lake Malaren, with stations on the island that comprises the "old city" and on the north mainland where the main business and government center is located, reasonably quick access to the shelter will also be possible from those sections.

As a parking garage at present, the shelter will help relieve the automobile traffic situation, which is as bad, and made worse by the difficulty of providing enough bridges across the lake. It will have accommodations for 600 cars on three floors, and as a shelter is designed for 6,000 persons. It is said to be able to hold 20,000 in an extreme emergency.

The layout consists essentially of a 1,000-ft tunnel, 42 ft wide and 33 ft high, terminating at either end in a circular room 43 ft high and 85 ft in diameter from which access tunnels to the surface branch off. There are other access tunnels near the mid point, and the whole installation spreads over a length of nearly 1,500 ft and involves 130,000 cu yd of excavation. It is placed deep in the rock, the "roof" thickness over the main tunnel varying from 60 to 82 ft.

The main access tunnels from either end are wide ramps, suitable for both cars and pedestrians, while the other entrances are for pedestrians only and are equipped with stairs. Three levels of stairs are installed in one tunnel, there are two levels in several, and some contain only a single stairway. Three entrances are planned to the subway—one ramp and two stairways.

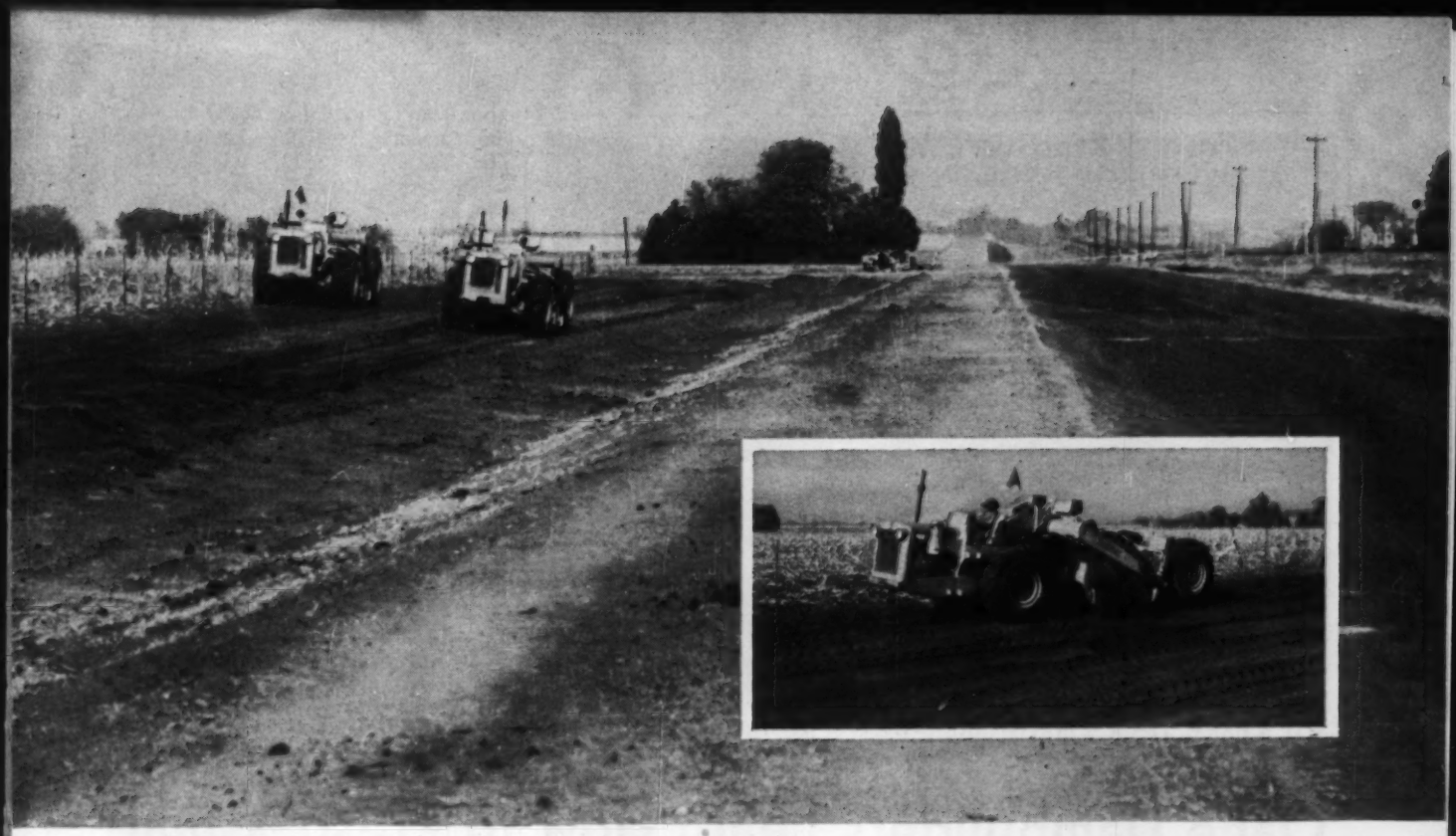
To increase the capacity of the main tunnel, both for cars and people, a three-story reinforced concrete frame runs its entire length. Off of the tunnel at either end, rooms, in which five-story frames are built, have been excavated to accommodate the machinery necessary for the functioning of the installation both as a garage and as an air raid shelter. Thus the lower two stories are devoted to water reservoirs and pump rooms, while on the upper floors are the ventilating equipment, the electrical control room and a standby electric generating plant. The other necessary shelter facilities, such as kitchens, food storage rooms and toilets are installed elsewhere along the main tunnel.

The principal entrance is at the north end, and is made larger (and more complicated from an excavation and construction standpoint) in order to provide separate openings for incoming and outgoing cars. Because of the longer span roofs in this area, special structural supports had to be installed. In one case these consist of arched concrete ribs radiating out from a central concrete ring to abutments on the rock walls. In another, two heavy concrete beams set at right angles and intersecting at the center are used as the roof support.

Excavation of this underground installation was carried on from the ramp entrances at either end. Drilling, mucking and haulage followed normal tunneling practice, although progress could not be rapid because of the smaller branching access tunnels and the various side rooms. After the excavation was complete, concreting of the several structural frames was undertaken, and the entire underground wall and roof surface lined with concrete.

Piping for the various services is, in general, hung on the framework where it is readily accessible for repair.

Building such shelters as this is one of the important aspects of Sweden's underground program. Two smaller ones have also been built in Stockholm, and there are others in Gothenburg, Malmo and several lesser cities of the country. These shelters, together with the hydro plants, the factories, the military installations and the storage facilities for oil and gasoline, are readying Sweden for carrying on its vital functions underground in case of need, and are, in the process of their construction, providing the Swedes with a rare opportunity to advance the art of rock tunneling.



Replace 1 dragline and 3 trucks with 2 D Tournapulls

Tournapull leaves shoulder, makes tight turn, and returns to borrow along blacktop. Low-pressure tires do no damage to pavement.

Units self-load, deliver 35 to 43 yds. hourly on shouldering work

BOOTH AND OLSON, INC., Sioux City, Iowa, bought their first two 7-yard D Tournapulls for city work — grading, curbing, doing gutter jobs and the like. "These units," says Foreman Earl Duffus, "made such a good showing that 2 months later we purchased two more 'D's'. These last two rigs we are now using for road building. On shouldering operations, 2 'D's' have replaced 1 dragline and 3 trucks They can't be beat."

The illustrated job shows several reasons for Mr. Duffus' enthusiasm. Here, contractors had 96,000 yards of clay and loam to move to widen and re-grade U.S. Highway 34 west of Burlington, Iowa. To speed the job, they roaded 2 of the Tournapulls from St. Joseph, Missouri. The 300-mi. trip took 16 hrs. (av., 19 mph).

At work, each Tournapull self-loaded 5 to 5½ pay yards of clay and loam in 1¼ minutes. Haul of 4300 ft. took a little over 3 min. (16 mph). Spread, 180° turn, plus 4700′ travel over blacktop back to cut, took 2½ minutes (24 mph). Time for the 9400′ cycle totaled 7 minutes. Output for the 2 "D's" averaged 70 to 78 pay yards per 50-minute hour.

Get the full story

Performance like this is one reason so many contractors are so enthusiastic over their D Tournapulls. *Interchangeability* is another feature you may find of interest. With Tournapulls you can own another trailing unit, a rear-dump, for instance (or a crane or flat-bed), for approximately ¼ the price of another complete unit. Get all the facts. Ask for a demonstration on your next job.

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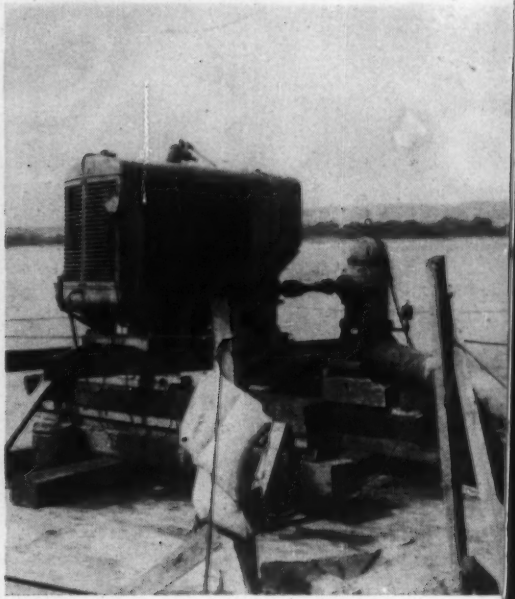
NOT A FARM, IT'S A BORROW AREA—Weeks of pre-wetting prepare the soil for compaction into Oahe Dam.



INTAKE PUMP floats on barge in Missouri River, moves 1,000 gpm to desilting

Oahe Dambuilders Learn How to Presoak Soil

Almost 5,000,000 cu yd of water is to go into the 78,000,000 cu yd of soil that will be Oahe, world's largest rolled earth dam.

This great volume of water, 870,000,000 gal, will be used in wetting embankment material, to bring it to optimum moisture content for compaction. It is water in addition to the 16.11 in. of annual rainfall around Pierre, S. D., where the Corps of Engineers has the big Missouri River project under way.

At Oahe, soil is presoaked with desilted river water in the borrow area before excavation, rather than sprinkled in the fill during compaction. While presoaking has been in use since around 1928, the Oahe job is unusual in the volume of soil and water involved, and also in the depth of presoaking in the rolling hills being excavated.

• **Moisture is deficient**—The fairly scant rainfall of the area is reflected in natural moisture content of soil at Oahe. It varies, according to locality and type of soil, from near the optimum of 15% to 15% below optimum. The average moisture deficiency is 9%.

Presoaking seeks to remedy this by bringing up the moisture content. The practice is not only to bring moisture of the ground in its natural state up to optimum, but 2% above. This takes care of evaporation losses in handling and placing the soil.

Care is taken not to get the soil too wet. If too wet it will not pack to required density, and time is lost while it is disked and turned on the embankment to dry it out.

Virtues of presoaking have been pointed out at Oahe through experience.

• **Sprinkling embankment tried**—The Stage 1 earthwork contract was let in July, 1950, to the Guy James Construction Company of Oklahoma City, Okla. (Completion was in September, 1952.) The firm subcontracted the compacted fill portion of its work. In the first season no prewetting was attempted. Moisture was introduced to the soil by sprinkler trucks watering down the earth as it was spread in lifts on the embankment.

This proved to be both unsatisfactory and expensive. Oahe's soil is a glacial deposit ranging from compact shaly glacial till to sand. Much of it is of such composition and grain size that when wet it is like wet flour. During fill sprinkling, costs shot up; dozers worked and reworked the soil to get it to the proper moisture content and earthmoving equipment was slowed to a walk as it hauled in new loads.

• **Then presoaking**—Because of this experience, the contractor turned to presoaking in the second season. With the borrow pit then in the relatively flat discharge channel area, the more familiar technique of ponding was used. Dikes were thrown up and the area kept filled with water from three to six weeks, depending on the desired depth of penetration and the type of material. In the final phase of the contract, the sprinkler system was used.

Stage 2 earth work went to Western Contracting Corporation of Sioux City, Ia. Because the major portion of the excavated area was in rough terrain, ponding was not practical. Dikes to hold the water would have been difficult and expensive to construct. The firm decided on the sprinkler system and subcontracted the prewetting. The subcontractor prewet 1,900,000 cu yd in two weeks. Maximum depth prewet was 90 ft.

Stage 3 went to C. F. Lytle Construction Company of Sioux City. On this job, still in progress, the contractor used the overhead system regardless of terrain, to prewet 7,000,000 cu yd of excavation.

Stage 4, latest of the earthwork contracts, went to Western. This job is the placing of the first embankment on the left bank of the Missouri River (the others are all on the right side). It involves 16,000,000 cu yd (a quantity twice as big as the entire embankment of Gavins Point Dam near Yankton, S. D.). Prewetting started March 31. Placing of earth has awaited the bringing of the soil to its proper moisture content. Over 59,000,000 gal of water have been introduced into the borrow pits and an additional 30,000,000 gal will be used to complete the Stage 4 work.

• **Method and layout**—Subcontractor to Western on the prewetting is

Claussen-Olson and Benner, Inc., and the Vaughn Land Development Company, of Holdridge, Neb. Subcontractor did the prewetting for Lytle.

Water is moved by a system of pumps through pipelines. Pipe is the so called invasion type pipe, light of wall and with quick-coupling joints.

The first pump, set on a barge in the Missouri River, is an 8-in. turbine, operated by a 60-hp unit. It moves 1,000 gpm through 1,500 ft of 8-in. pipe to a desilting basin 90 ft above the river surface.

At the desilting basin is a 6-in. centrifugal pump powered by a 160-hp unit. It picks up water from the pond, delivers it through 900 ft of 8-in. pipe, then into parallel lines 6 and 5 inches for 300 ft to a similar 6-in. pump powered by a 100-hp engine. The lift from pond to booster pump is 150 ft.

The first booster delivers to a second booster pump through 2,000 ft of 6-in. pipe. Difference in elevation here is 110 ft. The second booster is a 5-in. pump powered by an 80-hp engine. It pumps through 1,000 ft of main line to which the sprinkler lines are connected. The sprinkler lines are 5 and 4-in. diameter, ranging from 500 to 1,800 ft in length.

Totals: A lift of 350 ft and 5,700 ft of main line from the river to the borrow area.

• **Results**—The area being presoaked under the Stage 4 contract is roughly one-half by one-fourth mile, 80 acres.

The sprinkler heads are standard irrigation heads. They deliver 8 gpm, which gives 0.32 in. per hour.

The presently required amount of water runs around 55 in. At 0.32 in. per hour, this requires 7 days continuous watering of any one area.

Material to be prewatered ranges from 10 to 60 ft deep with an average depth of 30 ft. Material has been watered as deep as 90 ft.

Greater portion of the area being prewatered is covered by grass, growing on silty clay. This has an "insoak" rate of 0.30 in. per hour.

Moisture introduced into the overburden varies from 19.8 to 28.6 gal per cubic yard; average, 24.1. Average runoff, as surveyed by Army Engineers, is approximately 15%. Evaporation is about another 5%. Effective water placed runs about 80%.

After prewetting with the required amount of water, soil is let stand from two to four weeks for curing.

Since several types of soil may lay in strata in the borrow area, borings beforehand are necessary to calculate the amount of water that will be necessary. Test holes during prewetting keep tab on water penetration.

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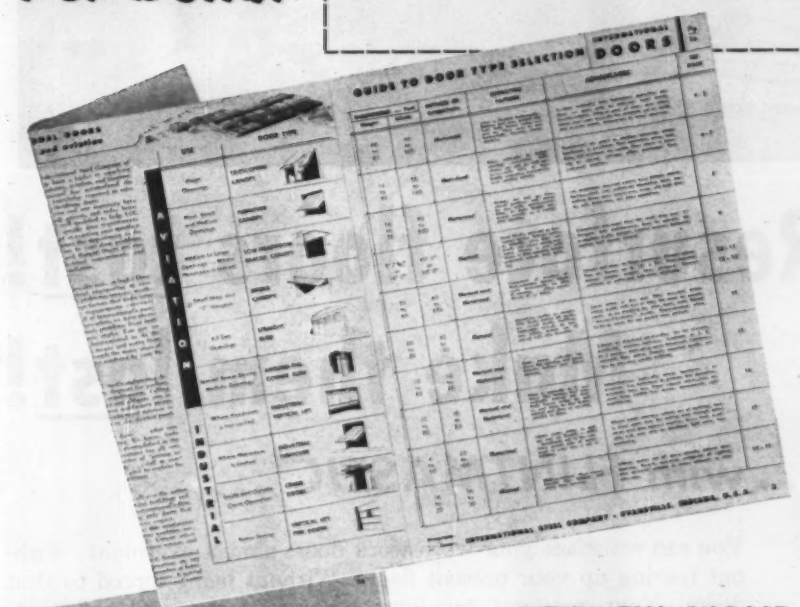

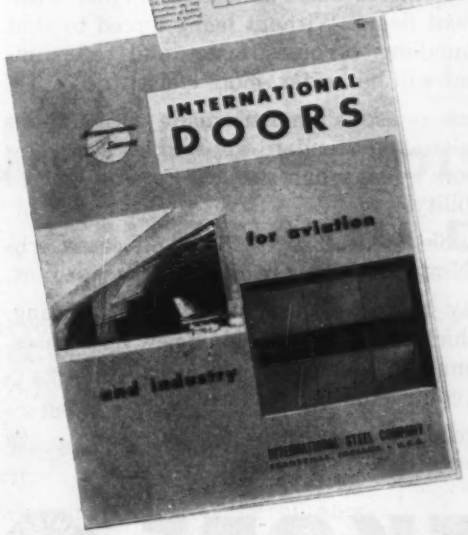

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• **Conclusions from experience at Oahe**—It has been concluded by engineers and contractors on Oahe that:

• Overburden can be wet to any desired depth. Depth is controlled by the length of time area is irrigated.

• Overhead sprinkler system is the best over all method.

• Steep hillsides can be wet as well as flat areas.

• Most satisfactory results are obtained by irrigating before grass and vegetative material is removed. Removal tends to seal off the soils so penetration is lowered.

• When prewetting fine gravel soils, best results are obtained by intermittent wetting.

• Less trouble results when clear water is used. Silt and fine sands suspended in the Missouri River tend to wear out pumps and clog lines and sprinkler heads. The fine suspended particles tend to seal off the soil and block off insoak.

The technique and its functioning was worked out in the field by the contractors and the construction branch of the Omaha District office of Army Engineers. Col. Thomas J. Hayes, 3d, is District Engineer. John Sibert is Oahe area engineer. Lee Crist is resident engineer on the embankment work. The latter two are of Pierre.

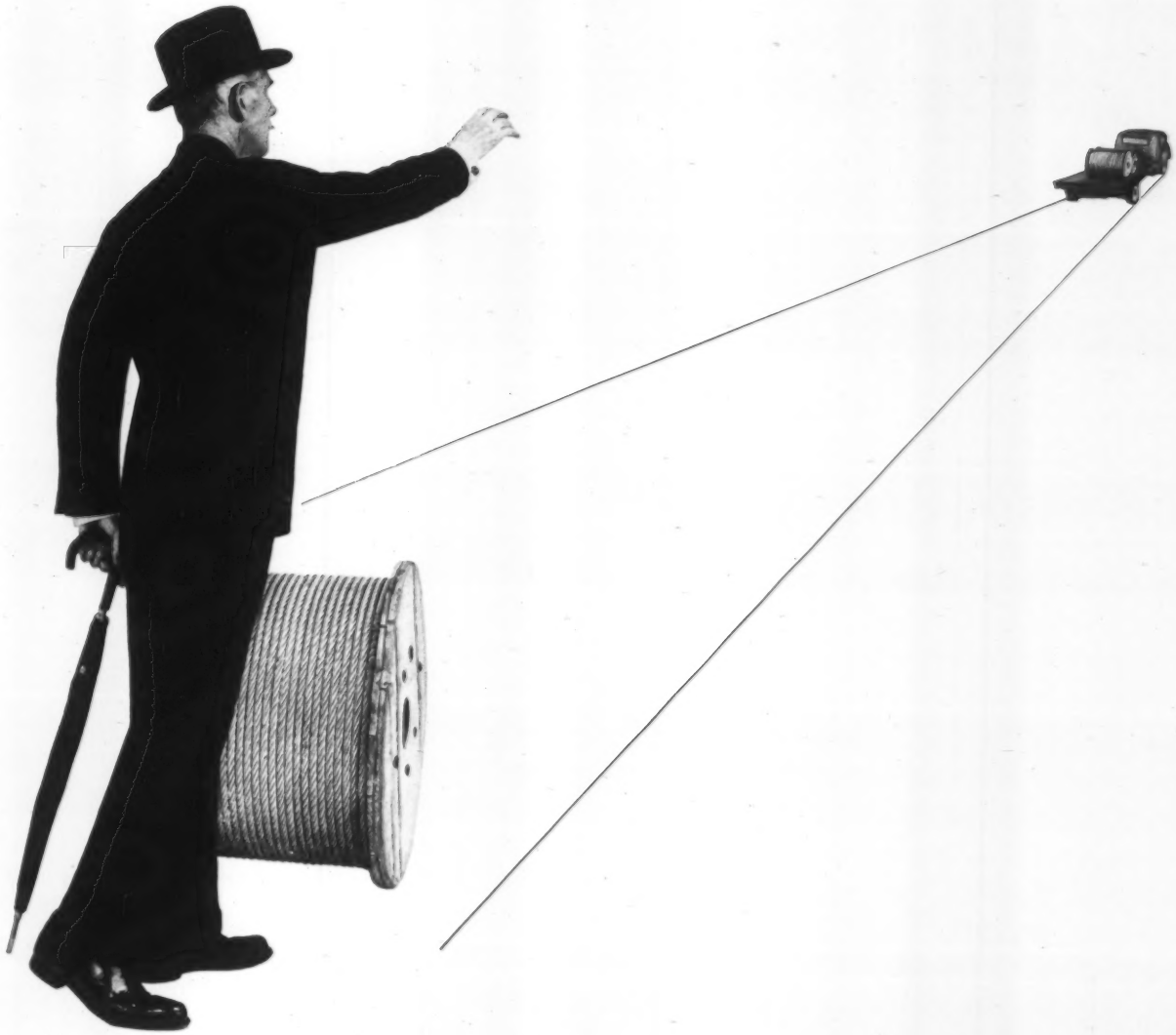
Study Shows How to Finance New Columbia River Bridge

New financial studies have recommended that the Astoria, Ore., Port Commission sell $14.8 million worth of revenue bonds to build a 4.3-mi bridge across the Columbia River estuary between Astoria and Point Ellice, Wash.

The cost of the three-year project is estimated at $25.4 million. To promote financing of the unbonded portion of the cost, A. C. Allyn Co., Chicago, investment brokers proposed formation of a bridge district among Washington and Oregon counties along West Coast Highway U. S. 101. Federal financing also was considered.

The bridge would make U. S. 101 a continuous road. At present, Oregon operates ferry service between Astoria and Megler, Wash.

Tudor Engineering Co. of San Francisco, which completed engineering plans for the project, recommended a two-lane bridge, mostly of trestle construction. The 1,170-ft cantilever span over the shipping canal on the Oregon side would have 183-ft vertical clearance and 1,070-ft horizontal clearance. There would be a 350-ft lift span over north channel, 150 ft above mean high-water.



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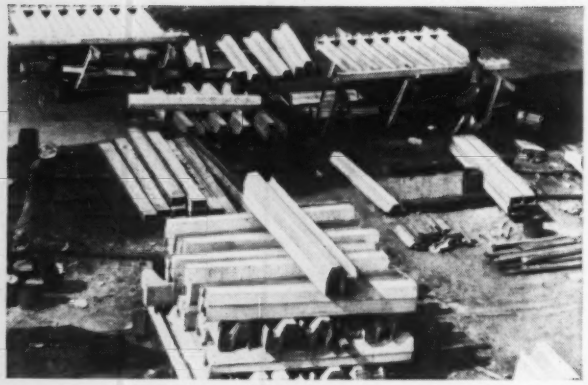
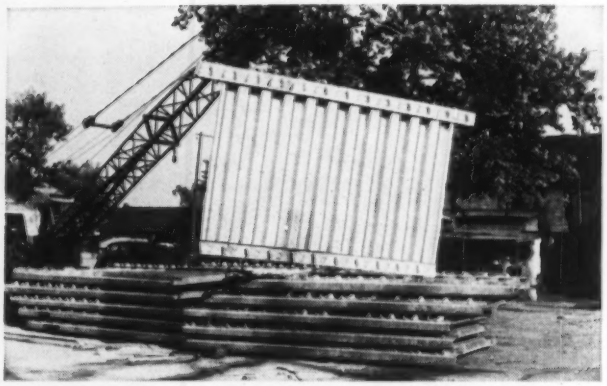


Transverse sections that form the bin sides are assembled on the job near a stockpile of parts. Individual metal units that make up the transverse sections are delivered ready to be bolted together.

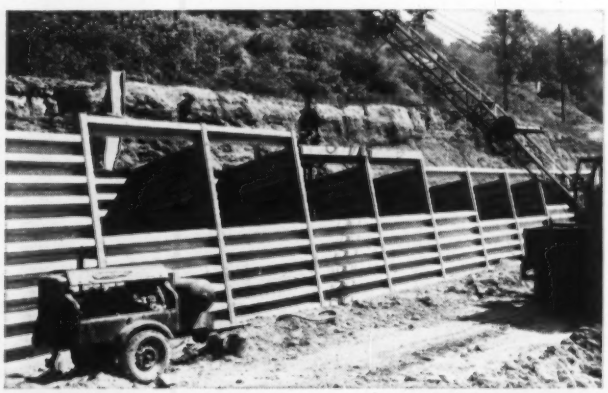


As sections are needed they are lifted into place without delay. They are set vertically at 10-foot intervals to provide, in effect, sturdy girders that keep the wall stable under load.

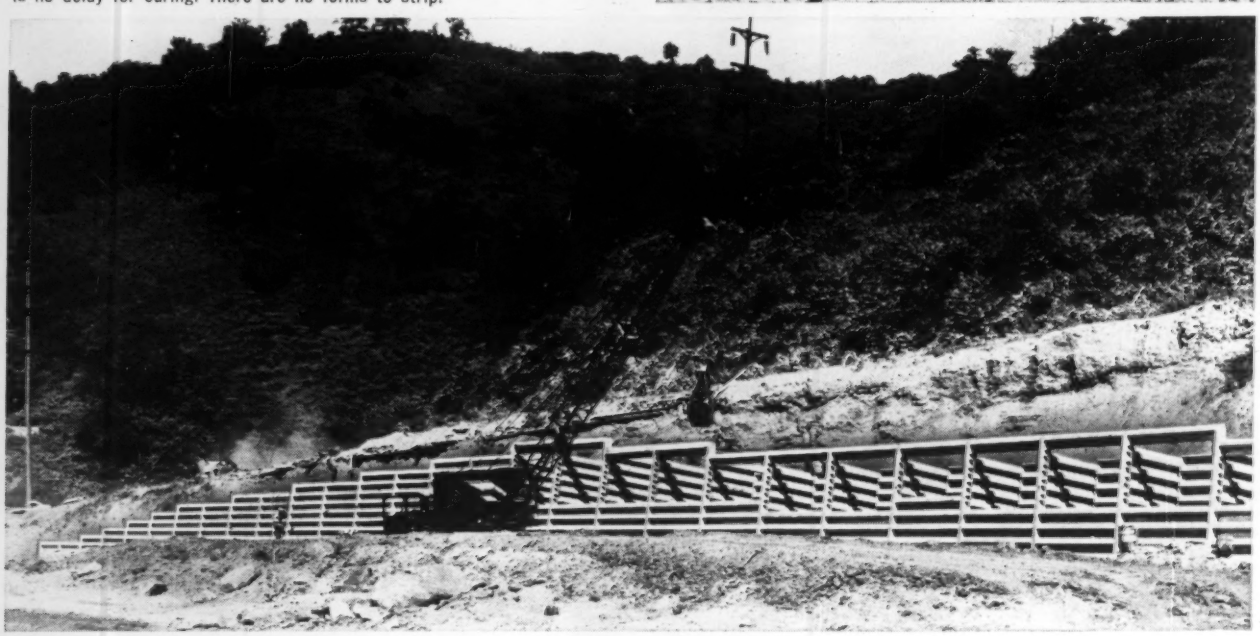
JOB-SITE "ASSEMBLY LINE" Speeds Retaining Wall Erection

Here is how good planning and Armco Bin-Type Retaining Walls can solve the problem of unstable slopes quickly, at low cost.

Wall takes shape as side panels are placed, and stringer units are added to form front and back of bins. Little excavation is required.



Completed bins are backfilled while adjoining bins are still being erected. Earth itself is used to provide weight; add stability. There is no delay for curing. There are no forms to strip.



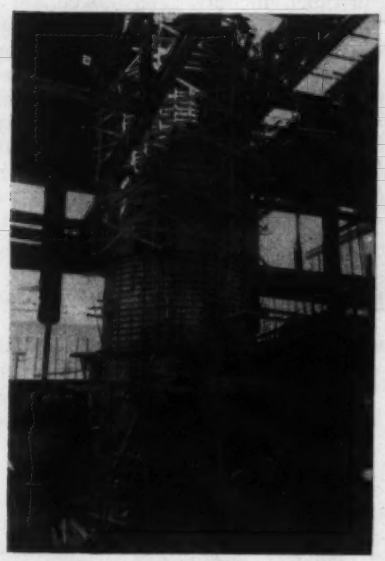
Write us for complete information on Armco Bin-Type Retaining Walls. Armco Drainage & Metal Products, Inc., 5225 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO BIN-TYPE RETAINING WALLS

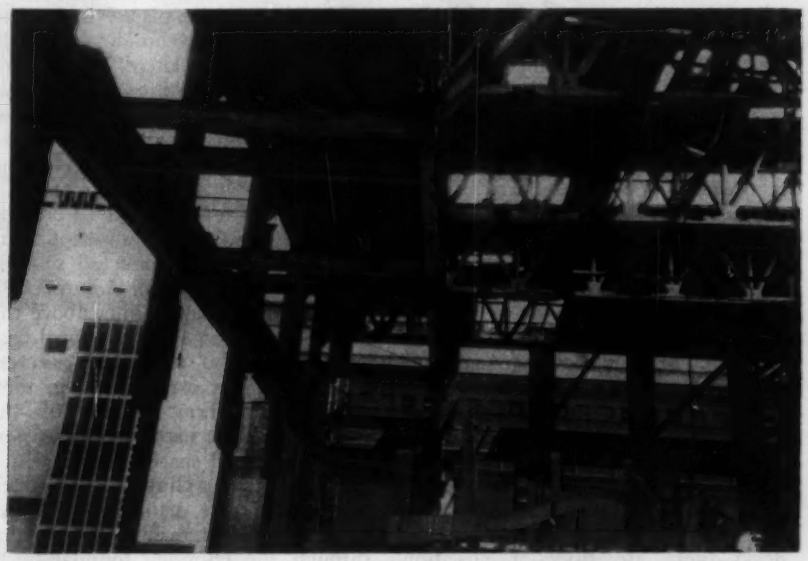
ARMCO®

VALUABLE SPACE WAS GAINED by removal of all but one row of columns and installation of steel roof trusses that allow clear spans of 124 and 133 ft.

TRICKY BLASTING was required for enlarged receiving pit.



INTERIOR CHIMNEY A MUST, so foundation extends rock to roof.



OLD STEEL REMAINS as temporary bracing and wire cable diagonal bracing was installed to provide additional protection until building is free-standing.

Incinerator Capacity Doubled Without Building Enlargement

The latest New York City incinerator project is neither the largest installation of the 11 planned, under construction or completed, nor will it provide the city with the greatest burning capacity.

But of all those in the $80-million program of new and rehabilitated structures, this one, located near the bank of the East River in Mid-Manhattan, represented the greatest challenge to the designers and builders.

The problem confronting them was complete rehabilitation of an outmoded 300-ton incinerator, increasing its capacity to 660 tons with provision for increased vehicle storage and employee services demanded by stepped-up operation of the plant.

Under normal circumstances the assignments would prove neither difficult nor unusual, but a zoning change that up-graded land use in the area—the original building was completed in 1927—affected fulfillment of every phase of the project from design to actual construction. The building, whose use became non-conforming with the change, could not by the city's own ruling be altered drastically either in volume or area occupied.

• **Building left intact**—As a result of the zoning ordinance, building and equipment designers were faced with packing the increased capacity into the existing shell—except for a one-story extension that provides a tipping floor at the west end—while that shell remained in place. Contractors were faced with necessity of performing several tricky demolition and construction operations ranging from extensive blasting within the confines of the building to alterations resulting in reconstruction of roof framing and curtain walls.

Under provisions for new land use, a major hospital and a housing development have risen since construction of the original incinerator structure. Elimination of flyash emission to a point far below the minimum allowed under normal specifications for incinerator operation dictated incor-

. . . Incinerator capacity doubled

poration of highest possible efficiencies in the new furnaces– efficiencies that were considered impossible at the time of installation of the old ones.

Dismantling and removal of all existing equipment and facilities was the first step on the reconstruction schedule, and while these operations were progressing crews went to work removing all non-bearing members of the structure itself.

When the building at last became a shell, empty of all except bearing members that were left in place temporarily, designated curtain wall sections were removed in interior as well as exterior walls. Diagonal bracing was installed where necessary through use of ¾-in. wire cables set in vertical and horizontal pairs.

Alterations to existing roof trusses followed, with removal of most of the old floor and wall members as new roof bearings assumed their assigned loads. A few panels were left intact to provide necessary temporary bracing. The 12-ft-deep structural steel floor trusses allowed removal of all but one transverse row of columns that separates a six-bay (133-ft x 148-ft) section of the eastern half of the building from a five-bay (124-ft x 148-ft) section at the western end. This row ultimately will frame the wall that will separate the burning portion of the structure from vehicle storage and personnel section.

In order to minimize excavation, ground floor elevations in the eastern section were established at three levels. This arrangement also facilitated layout of vehicle storage areas and ramp access to different storage decks–there are three–at elevation +24, +42 and +60.

• **Blasting is tricky**–A 24-ft x 133-ft receiving pit had to be blasted out of rock to a depth of 22 ft, and similar operations were necessary for a residue conveyor tunnel pit 28 ft wide, 19 ft deep and slightly less than the length of the receiving pit.

With old columns resting on pad footings on rock at grade, a problem arose when necessary receiving pit capacity dictated use of a maximum area within the building. This meant that the edge of the tipping floor would follow a line bisecting the center-lines of the columns, which in turn resulted in the bisecting of all intermediate footing pads.

Blasting operations, therefore, under-cut to the center of each pad for the entire length of the western end-wall of the building. Milli-second-delay detonation was used for all blasting to minimize vibration and its effect upon the structure. After each shot in vicinities of footing pads, shoring had to be placed under the pads and on the building side of each to prevent lateral movement. Although rock in the most critical areas of blasting was sound, the poor condition in the residue pit required additional care and underpinning. Damage was avoided in all cases.

The new chimney also had to be located within the confines of the building. It was constructed so that all flue functions were limited to that portion of the chimney above the roof. The support is an octagonal base on rock, with a reinforced concrete foundation that extends to the roof.

The foundation portion of the chimney will be used for storage, except for a small space through which a stack flyash chute–a 4-in.-thick pipe, 18 in. in diameter–will pass. The chute will transmit stack residue through the chimney foundation to trucks parked on one of the building ramps.

• **Specially designed furnaces**–Close proximity of the hospital was the prime concern of public works engineers in design of incinerator units. They found is necessary to design the three furnaces with dust collectors, choosing multiunit, small diameter types. Installation of these would necessitate use of large induced draft fans, so standard type fans were specified with air and water cooling chambers to protect fan parts from damage by hot flue gases.

The furnaces represent a departure from conventional design. They will be continuous feed and continuous discharge, operating sealed. Refuse material in the feed hopper will make an efficient seal at the feed end, and a water seal will do the same at the discharge end. Combustion will therefore be carried on with more constant temperatures maintained within the combustion chamber than is usually the case in incinerator operations.

Traveling grates will consist of a modified inclined feed stoker and a horizontal burning stoker, each with manually controlled speed. The operator may adjust rates of incineration according to demands of the extremely heterogeneous nature of the material. The character of the refuse could demand several changes during the course of one hour's operation. Control of burning rate is one of the chief factors in reduction of flyash emission from the stack.

Under properly controlled combustion, material will be consumed by the time it reaches the end of the horizontal stoker, according to designers, and the residue will drop into water-filled conveyors below in the conveyor pit, for discharge to trucks.

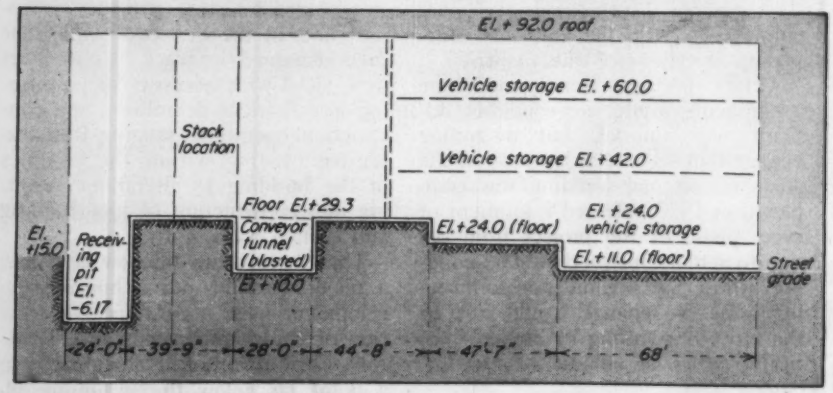
• **Designers and builders**–Strobel & Salzman, consulting engineers of New York City were responsible for structural design of the incinerator.

Psaty and Fuhrmann, New York, were general contractors, with Brendan A. Burns as project superintendent and Anthony M. Myerstein as mechanical engineer on the job.

Demolition and steel erection was handled by Lipsett, Inc. and Thos. Crimmins Contracting Co. did the excavating.

Design and construction is under direction of Commissioner Frederick H. Zurmuhlen of the Department of Public Works of the City of New York through William A. O'Leary, director of the division of sewage disposal. S. W. Steffensen is chief of sewage disposal design and V. Westergaard is project engineer.

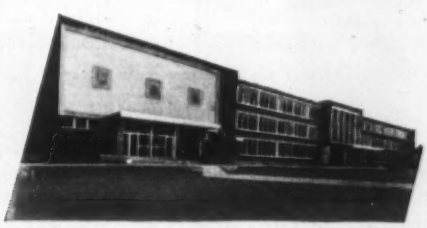
This $5.4-million project will be the fourth incinerator to be completed under the city's current program. The first was the 800-ton, $4-million Betts Avenue Incinerator in Queens, placed in operation in 1950.



THREE-LEVEL GROUND FLOOR was maintained in final plan to facilitate layout of vehicle ramps and to minimize excavation during rehabilitation operations.

This school is fire-safe! It has a "FIREFIGHTER" GYPSUM ROOF DECK

Lima Senior High School, Lima, Ohio. *Architects:* McLaughlin & Keil, Lima; Strong, Strong & Strong, Lima; *General Contractor:* H. U. Tuttle, Lima; *Roof Deck Contractor:* Anning-Johnson Co., Cleveland, Ohio.



Students at Lima's new Senior High School are protected from fire by 140,000 square feet of Gold Bond "Firefighter" Gypsum Roof Deck. Fire spread danger is greatly reduced because incombustible gypsum doesn't transmit high temperatures or warp when exposed to hot flame.

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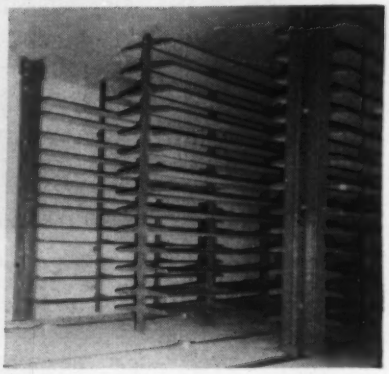


Cuba's National Library, one unit among several in a group of monumental public buildings under construction in Havana, is a rare structure.

It is rare, first, for the structural steel frame used for its tallest portion, in a country where economics favor reinforced concrete even to 39-story heights (ENR July 28, p. 34).

It is rare, secondly, for the fact that Remington Rand, suppliers of its steel bookshelves, sold a packaged deal including design and procurement of the structural steel.

Structural steel came from Buffalo Steel Co., fabricated to a floor plan and a structural design that has the book shelves carried directly by the building columns.

The building is a composite structure: structural steel in its 16-story central section and reinforced concrete frame in lower wings.

All the shelving (space for an estimated 5,000,000 books) is in the central tower of the library, where columns are spaced so that the distance between them exactly matches a bookshelf length. They are 9 ft on centers in both directions.

Columns are built up of split H-sections placed flange-to-flange. The resultant column is an x-shaped section. Columns are 12-in. at basement level and reduced to 8-in. in upper stories.

Just as columns must be relatively heavy to carry the shelves, floor beams and slabs can be relatively light. Floor beams are 5-in. WF, carrying a 5-in. concrete slab. There is no flooring in this portion of the building—just concrete planed to a smooth surface.

Govantes y Cabarrocas were architects on the structure. Frederick Snare Corporation is the builder. Work began in December 1952 and is due for completion early next year.

'Copters Are Pack-Horses in Tasmania

Two Royal Australian Navy helicopters were used recently for general transport duty on a hydroelectric project in Tasmania. During a week of intensive activity, the "whirlybirds" hauled loads which included 650-lb concrete pipes, geologists engaged in survey work, supplies, and personnel traveling between camps. The pair completed more than 40 hrs flying time over wild and largely uncharted territory.

Operations began with an attempt to lower a radio mechanic by winch line to attach an aerial to the top of a 50-ft mast. At one point, with the

SIMPLE LANDING AREAS consisted of markers or oil drum tops on soft ground.

LOADS LIFTED to supply the project included a number of 650-lb concrete pipes.

RADIO MECHANIC was lowered to install radio mast during early part of operation.

radioman clinging to the mast, the helicopter was virtually in the condition of tethered flight.

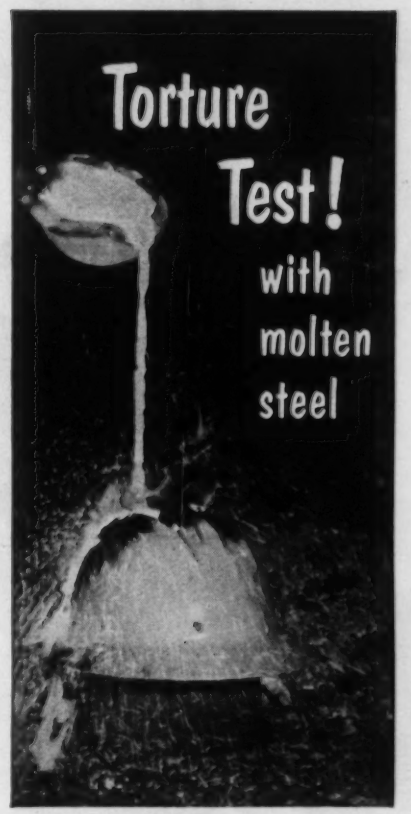
During early sorties, surveyors and triangulation stations were ferried to various outlying peaks in unmapped and forest-covered territory. A 15-min flight was estimated to be equivalent to a two to four-day trek.

Later, when moving personnel and equipment 15 mi from Great Lake to Lake McKenzie, where a river-gaging station was being erected, the aircraft showed they could handle in one day an operation that might have taken several weeks using packhorses.

For two days, the helicopters, carrying two or three passengers on each flight, enabled geologists to obtain barometric levels and examine rock formations along river gorges.

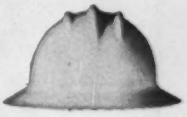
Engineers and geologists were also taken on tours of inspection over the southwestern area of Tasmania. It was shown that with correct equipment, accurate contour levels could be plotted and barometric levels could be obtained from the air.

Little difficulty was encountered with the use of the planes, but at one camp where the ground was extremely soft, it was necessary to lay out three oil drum tops. These were placed beneath the wheels of the helicopter as it hovered and served as a temporary heliport.



Steel, molten at 3000° F., was poured over a Bullard Fiberglas Safety Hat. The white hot metal did not pierce any part of the hat. Proof of the extra margin of safety built into all Bullard Fiberglas Hats and Caps.

Hat after test



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Westinghouse coordinated substation is arranged for flexibility and economical expansion. An extra bay and transformer can be added easily whenever additional feeders may be required.

Houston water purification plant, Houston, Texas. Architects and Engineers: Freese, Nichols & Turner. General Contractors: Brown & Root, Inc.—all of Houston, Texas.

Westinghouse indoor metal-clad switchgear provides positive protection for the entire electrical system through its drawout air circuit breakers. Matched unit construction assures economical expansion.

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FACT:

They engineered an electrical system that anticipates future expansion

flexible design of Westinghouse apparatus permits installed horsepower to more than double

Problem: At the *City of Houston* water purification plant, the possibility of a 100% increase in installed horsepower over the next few years made flexibility a major requirement when the electrical system was engineered.

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. . . as a 25-ton crane, you get maximum safety and accuracy, full 25-ton capacity at 12 foot radius, high lift of 100 ft. and full operator vision in 3 directions.

. . . as a fast-operating 1¼ yard clamshell, the "2000" features a long reach, high lift and smooth yardage-producing operation.

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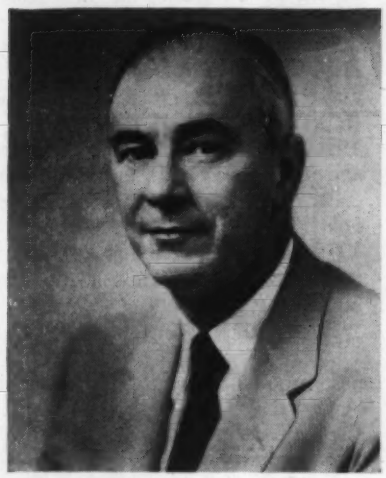
MEN AND JOBS



R. E. Harvey

M-C&S Elects R. E. Harvey Executive Vice President

Robert E. Harvey has been elected executive vice president and assistant to the president of Merritt-Chapman & Scott Corp., effective Sept. 1. He will be directly responsible under president Louis E. Wolfson for overall operations of the company.

Before assuming his new duties, Harvey was executive vice president in charge of the company's steel division, and was executive vice president and general manager of Newport Steel Corp., an M-C&S subsidiary. Those posts have been assumed by Alfred P. Miller, Newport Steel vice president for operations since 1951.

Harvey joined the M-C&S organization in 1954 and was elected a director of the company last December. In addition to his earlier associations with Frigidaire Corp., Penn Oil Co., Todd Shipyards Corp. and Capital Transit Co., he served with the U. S. Treasury Department, Commodity Credit Corporation and U. S. Navy from 1933 to 1948.

Architect and Builder Joins Homes For Korea

Carl G. Lans, California architect and builder, has been appointed technical director of the building industry's Homes For Korea—a private enterprise "Point Four" program of technical assistance to South Korea.

The Homes For Korea program envisages the building of up to 1,000 "pilot" homes in South Korea under the direction of Lans, who plans to fly to Seoul next week to start construction work.

According to Gen. James A. Van Fleet, USA (Ret.), honorary chairman of the Homes For Korea committee, the homes will be built by Koreans with materials, insofar as possible, indigenous to South Korea. Objective of the program is development of a home building industry in a country where the housing shortage is estimated at 1,000,000 units.

Under Lans' direction, Koreans will be taught practical methods and techniques in home building and will be instructed in the operation of simple construction machinery. The pilot homes will be turned over to a Korean Housing Authority for sale and the proceeds put in a revolving fund for financing additional homes.

Since 1952, Lans has been technical advisor to the Earl W. Smith Organization in El Cerrito, Calif. He served earlier as technical director of the National Association of Home Builders and as a technical officer with the Federal Housing Administration.

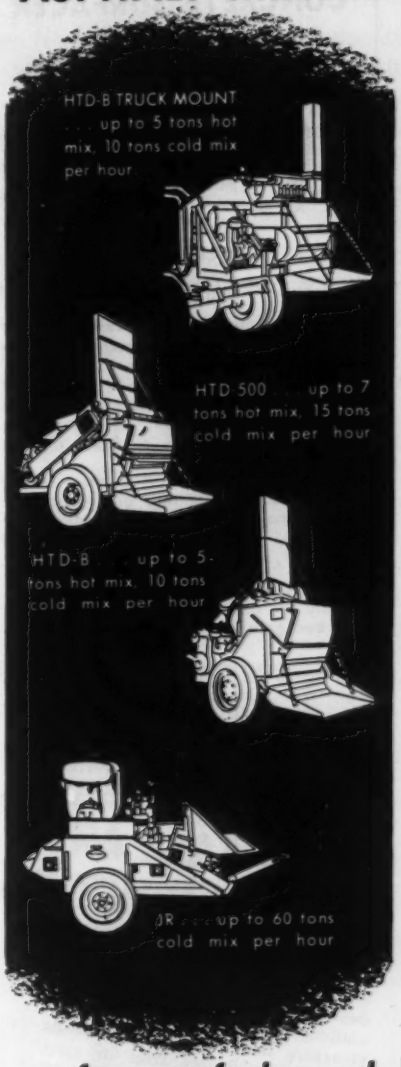
Designer of Dams Retires From Bureau of Reclamation

John J. Hammond retired this week from the Bureau of Reclamation, after 39 years of government service. He has been chief of the Dams Branch, Denver, Colo., since 1952.

During his career, Hammond has supervised the design of nearly every major concrete dam of the bureau, including Grand Coulee, Hoover and Shasta Dams—the three highest and largest concrete dams in the world at the time they were built. He has served as a consultant to the govern-

J. J. Hammond

McConnaughay
ASPHALT MIXERS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HTD-B . . . up to 5 tons hot mix, 10 tons cold mix per hour
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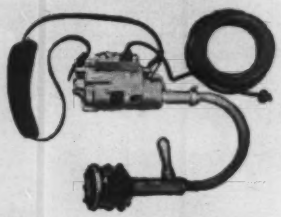
MODEL A



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Your Special Service Needs

ment of India and Formosa, and has directed the design of dams in the Panama Canal Zone and Australia.

A civil engineering graduate of Colorado A&M College, Hammond began his engineering career with the Reclamation Service, predecessor agency of the Bureau of Reclamation, in 1916. He left federal service in 1919 but returned the following year, and has been in the bureau's Denver office since 1923, serving in various capacities from assistant engineer to chief of the Dams Branch.

Hammond is a member of the International Commission on Large Dams, and attended its Fifth Congress in Paris last spring as a United States delegate. He is also a member of the International Commission on Irrigation and Drainage.

He plans to open an office in Denver as an engineering consultant on the design of dams in this country and abroad.

Admiral Studds Retires From Geodetic Service

Rear Admiral Robert F. A. Studds has retired as director of the Coast and Geodetic Survey, U. S. Department of Commerce.

Trained as a civil engineer, Admiral Studds' entire professional career has been with the bureau, which he joined in 1919 after serving in World War I with the 472nd Engineers. He moved progressively through the various ranks of the service until his appointment as director in 1950.

In addition to office assignments in San Francisco and Washington, he has conducted hydrographic surveys along the coasts of the United States, Alaska and the Philippines and has contributed to the development of an airborne magnetometer for aerial surveying.

Admiral Studds is a past president of the American Congress on Surveying and Mapping and was awarded the Gold Medal of the Department of Commerce in 1952.

Highway Engineer Resigns To Take Position in Egypt

C. L. Motl, who has been chief maintenance engineer of the Minnesota Department of Highways since 1939, resigned last month to accept an appointment as consulting engineer on highway maintenance problems in Egypt.

He will be associated with Charles M. Upham Associates, Inc., consulting engineers in Washington, D. C., now engaged in extensive road projects in Egypt on behalf of the United States government.

Motl joined the old Minnesota Highway Department in 1913 as an assistant bridge engineer but resigned from state service twice—once in 1916 to become a county engineer, and again in 1935 to enter the heavy construction and industrial equipment field. He rejoined the department in 1939 and since then has directed all maintenance operations of the trunk highway system.

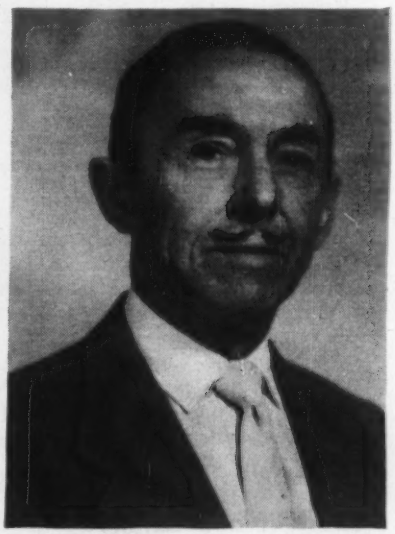
A civil engineering graduate of the University of Minnesota, Motl is a past president of the Minnesota Surveyors and Engineers Society and of the Minnesota Federation of Architectural and Engineering Societies.

Structural Steel Industry Announces Student Awards

In its sixth annual scholarship program, the American Institute of Steel Construction has awarded $1,000 scholarships in civil or architectural engineering to ten high school graduates.

Winners of the nationwide contest

(*Continued on page 64*)



H. N. Walker

Joins U. N. Staff in India

Harold N. Walker, chief of the design branch, Portland, Ore., District, Corps of Engineers, has received a year's leave of absence to accept appointment to the technical advisory board of the United Nations for duties in New Delhi, India. A specialist in design of dams and hydroelectric powerhouses, he expects assignment to similar work in India.

Walker's successor in Portland is Lewis E. Knerr, former assistant chief of the engineering division.

Prepakt solution for difficult cofferdam seal

■ The contractor and engineers building the new Hollywood (Fla.) Sewage Treatment Plant faced a tricky cofferdam seal problem for the pump house foundation. As shown in the diagram (below) the concrete slab had to provide a water-tight joint with the walls against a 20-foot hydrostatic head.

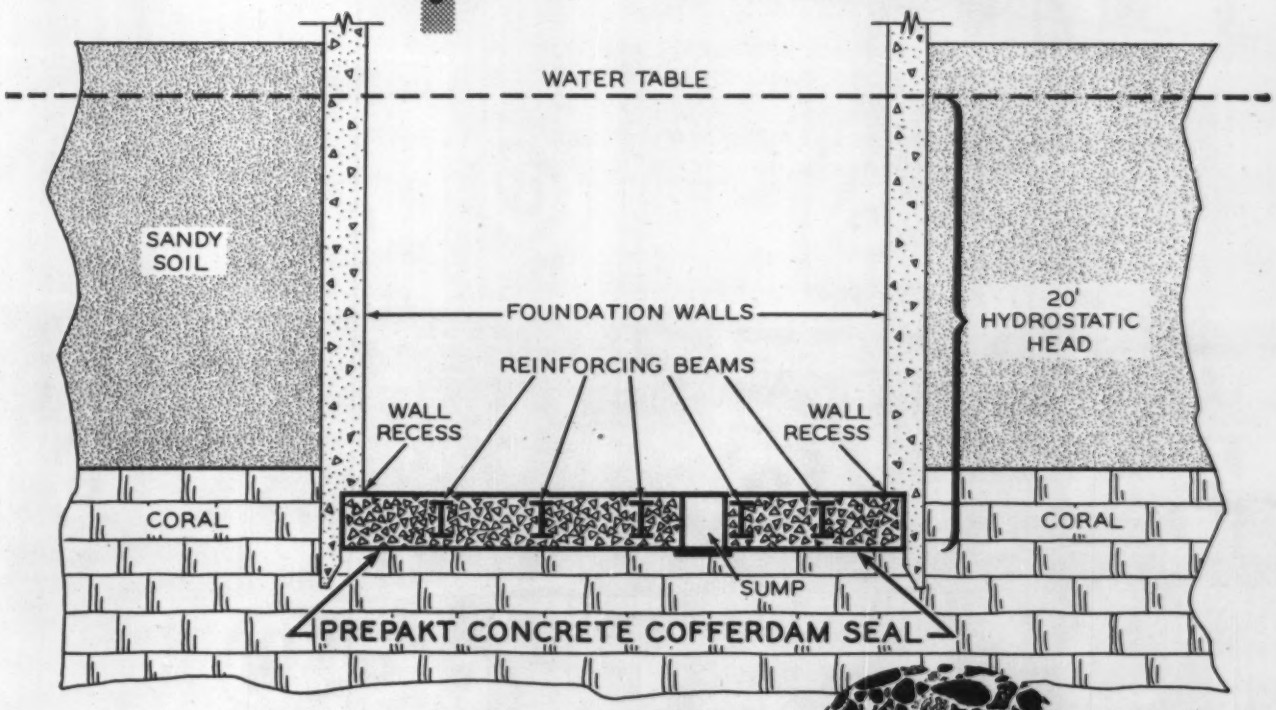
Because of the stiff requirements for an effective seal of high quality concrete, Intrusion-Prepakt was called in to place a PREPAKT concrete seal. PREPAKT concrete is made "in the form" by consolidating pre-placed coarse aggregate with INTRUSION mortar. When placed underwater, INTRUSION mortar displaces water without dilution.

A 3-foot PREPAKT concrete seal reinforced with H-beams was placed underwater directly on rock in the open excavation. Since PREPAKT concrete has virtually no shrinkage and produces a high-strength bond to existing concrete, the job was an outstanding success. A positive seal was obtained under the shoulder recess as well as a tight structural tie-in with the walls. Embedment of reinforcing beams was complete. The extra strength and quality of PREPAKT concrete easily withstood the 20-foot head.

The contractor and engineers are pleased about the results achieved with PREPAKT methods. Mr. Ben Johnston, superintendent, Wiley N. Jackson Co. reports: "There has been only a minor seepage at any point. PREPAKT concrete gave us a much better seal than tremied concrete would have."

To save time and money on your next difficult foundation problem, call on Intrusion-Prepakt, Inc.

Engineers: Smith & Gillespie, Jacksonville, Florida
Contractor: Wiley N. Jackson Company



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Prepakt maintains a complete field construction organization plus an engineering service and functions as prime or sub-contractor. For further information, write: Intrusion-Prepakt, Inc., Room 779-E Union Commerce Building, Cleveland.

Intrusion and *Prepakt* are trade-marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655004, 2434302 and others, also patents pending.

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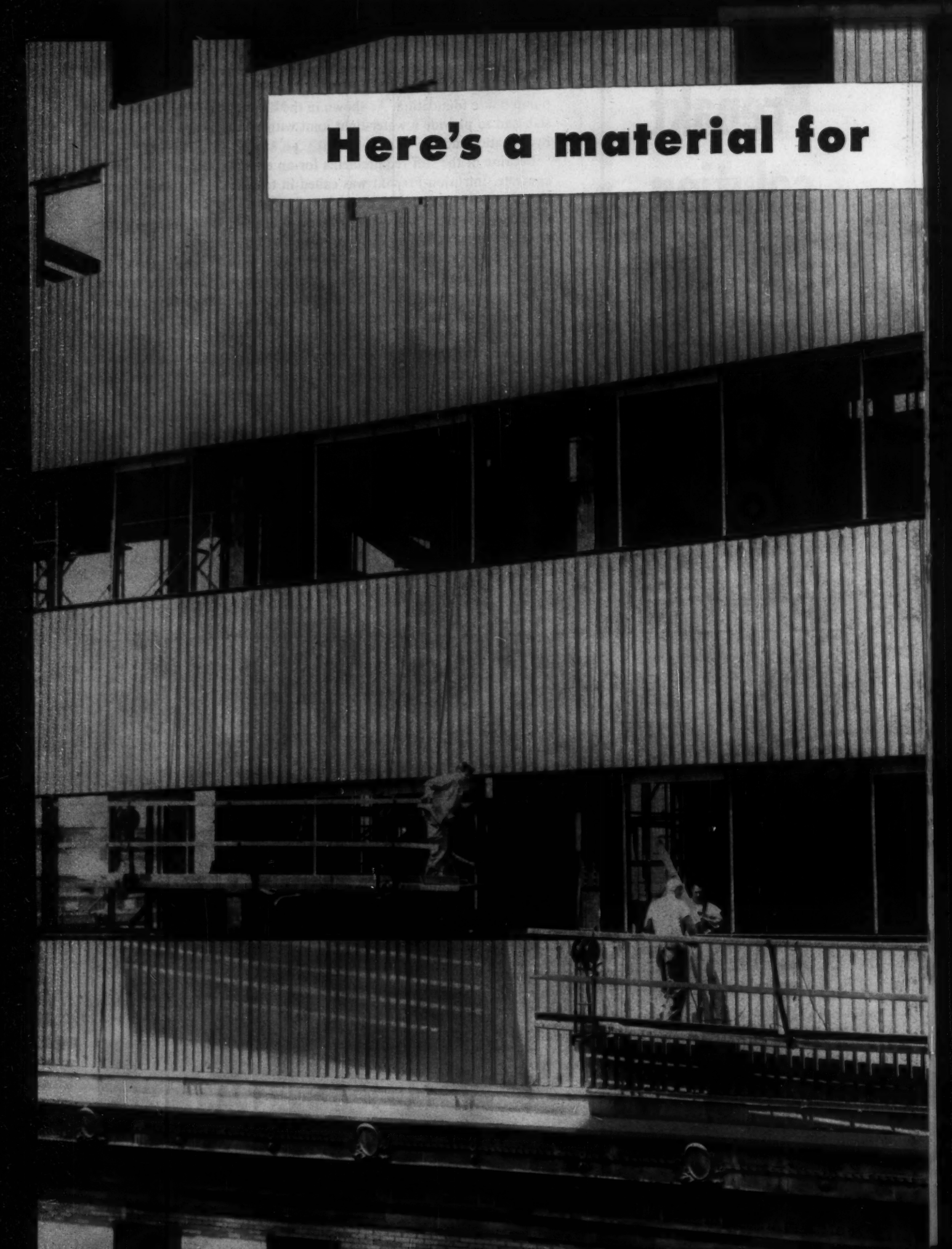
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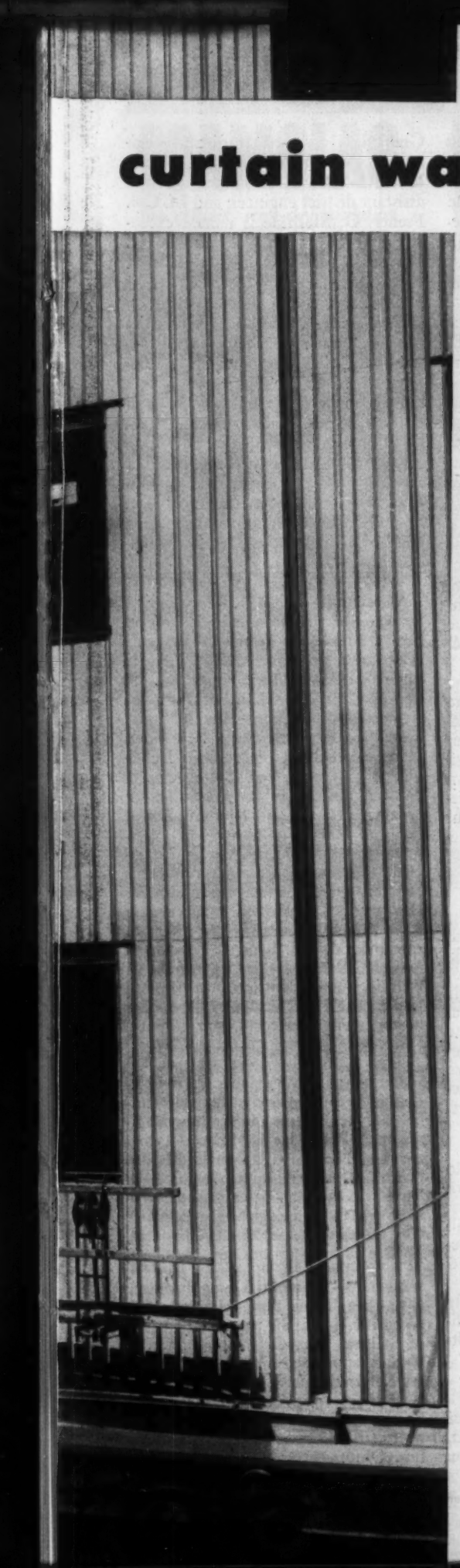

curtain wall construction

that solved a weight problem in Bellevue Hospital expansion

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One of the primary advantages of Stainless Steel as a material for curtain wall construction is the saving in weight its use makes possible. Because Stainless is inherently strong and because no allowance need be made for the effect of corrosion, thin sections can be used.

Never has this advantage of Stainless Steel been better illustrated than in the addition of two floors to New York City's Bellevue Hospital. Existing foundations were limited in the amount of additional weight that could be carried. Stainless Steel panels, weighing 14 pounds per square foot compared with 130 pounds for masonry, were used. This permitted the structural steel to be far lighter, too.

The attractive appearance of Stainless Steel was another factor in its use on this hospital. The architect sought to give the addition the appearance of a totally new facility, rather than a mere expansion without aesthetic appeal. Stainless panels accomplished this, along with permanent good looks.

Erection was handled rapidly with a four-man crew installing four 30-square-foot panels an hour. The construction had more than the required 2-hour fire ratings and the panels had the insulating quality of a 12-inch masonry wall.

As the producer of USS Stainless Steel, we have worked closely with the fabricators of Stainless Steel panels for curtain wall construction. We'll be glad to send you further information and put you in touch with these fabricators. Write to United States Steel Corporation, Room 4919, 525 William Penn Place, Pittsburgh 30, Pa.

* * *

SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

Newly installed Stainless Steel panels on the Bellevue Hospital addition. Architects and engineers: Fellheimer & Wagner. General contractors: Buhl Construction Company. Design and construction under the supervision of the New York City Department of Public Works. Stainless Steel panels fabricated by H. H. Robertson Company.

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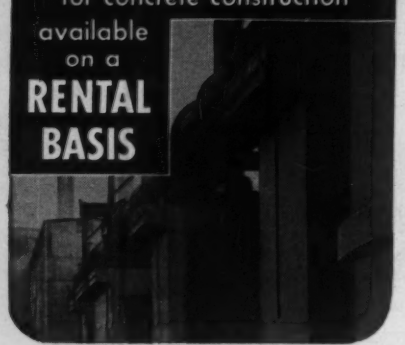

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represent 27 states and were selected from 99 high school seniors nominated by 64 steel fabricating companies. They may attend any one of 129 accredited colleges offering degrees in civil or architectural engineering.

J. Bruce Butler, chairman of the Mississippi Valley Structural Steel Co. and head of the institute's committee on education, said that this year's program attracted more competitors than those of the past. He pointed out that the scholarship program is designed to help young people who may aspire to become engineers in the fabricated structural steel industry to get the necessary technical education.

Opens Office in Miami

Mario de la Torre, former senior engineer with F. H. McGraw & Company, has opened an office as consulting engineer in Miami, Fla. Name of the new firm is M. de la Torre & Associates.

A civil engineering graduate of the University of Maryland, de la Torre has been associated with large construction projects here and abroad for the last twenty years. He was a resident engineer during the war with Pan American World Airways on its airport development program in various parts of the world, before joining McGraw in 1945.

Engineers Form New Firm

A new firm of consulting engineers has been formed in Gary, Ind., with Mahlon J. Plumb, H. Kenneth Tuckett and Milton Pikarsky as members.

Plumb and Pikarsky were formerly associated with the New York Central Railroad, and Tuckett was with the Engineering and Development Corporation. All are civil engineers, whose combined experience in the construction field covers more than forty years.

Joins Consulting Firms

Charles R. Waters, former Buffalo district engineer with the New York State Department of Public Works, has joined De Leuw, Cather & Brill as an associate, and has become a special consultant to De Leuw, Cather & Company.

He will be in charge of the recently organized Buffalo office of the affiliated New York and Chicago consulting engineering firms.

Men and Job Briefs . . .

• **Corps of Engineers**—In a series of personnel changes in the Portland, Ore., district office, **Col. Jackson Graham** is assigned as district engineer to succeed **Col. James U. Moorehead; Col. David S. Parker** becomes assistant district engineer; and **Lt. Col. Francis G. McBride** is named executive officer . . . **Lt. Col. Thomas G. Harton** takes over as assistant district engineer in the Vicksburg district.

William R. Harrison, former chief of the Maintenance Branch, is appointed Chief of Operations, Vicksburg District. He was originally assigned to Vicksburg in 1928 and during the war served overseas as an assistant engineer with the 6th Army . . . **Reynold F. Hagist** is named labor relations officer for the Alaska District, with headquarters in Anchorage. For the past 18 months, he's been chief of labor relations for the Northeast District.

• **Associations**—The North Carolina Society of Professional Engineers names **Frank B. Turner** of Raleigh as its next president . . . **Elmer R. Ligon,** research director of W. S. Dickey Clay Pipe Manufacturing Co. is elected president of the National Clay Pipe Research Corp. . . . **Gene L. Vescovo,** head of Vescovo Building and Realty Co., St. Louis, is named president of the Home Builders Association of Greater St. Louis.

• **Careers**—Graham, N. C., civil engineer **H. D. Jones** is appointed director of safety for the North Carolina State Highway Commission, succeeding **L. R. Fisher,** who resigned to enter private practice . . . **Leon L. Morton** is named director of the Department of Building and Housing Inspection, Louisville, Ky. . . . **Harry D. Keller** becomes engineer for Logan County, Ohio.

Junior sanitary engineer **Patricia L. Feuher** becomes the first female member of the Bureau of Sanitary Engineering, Pennsylvania State Department of Health . . . **Donald Rhodes** resigns as county sanitary engineer in Dayton, Ohio, to enter private business . . . **C. W. Edge** is named chief city building inspector at Charlotte, N. C.

• **Business**—**Raymond Young,** formerly with the Illinois State Highway Department, joins the engineering staff of Soiltest, Inc., Chicago . . . **C. H. Case** is appointed a division manager for Kaiser Engineers Division of Henry J. Kaiser Co., Oakland, Calif. . . . **Freeman Mann** is named chief engineer of the Dresser-Ideco Co., Columbus, Ohio.

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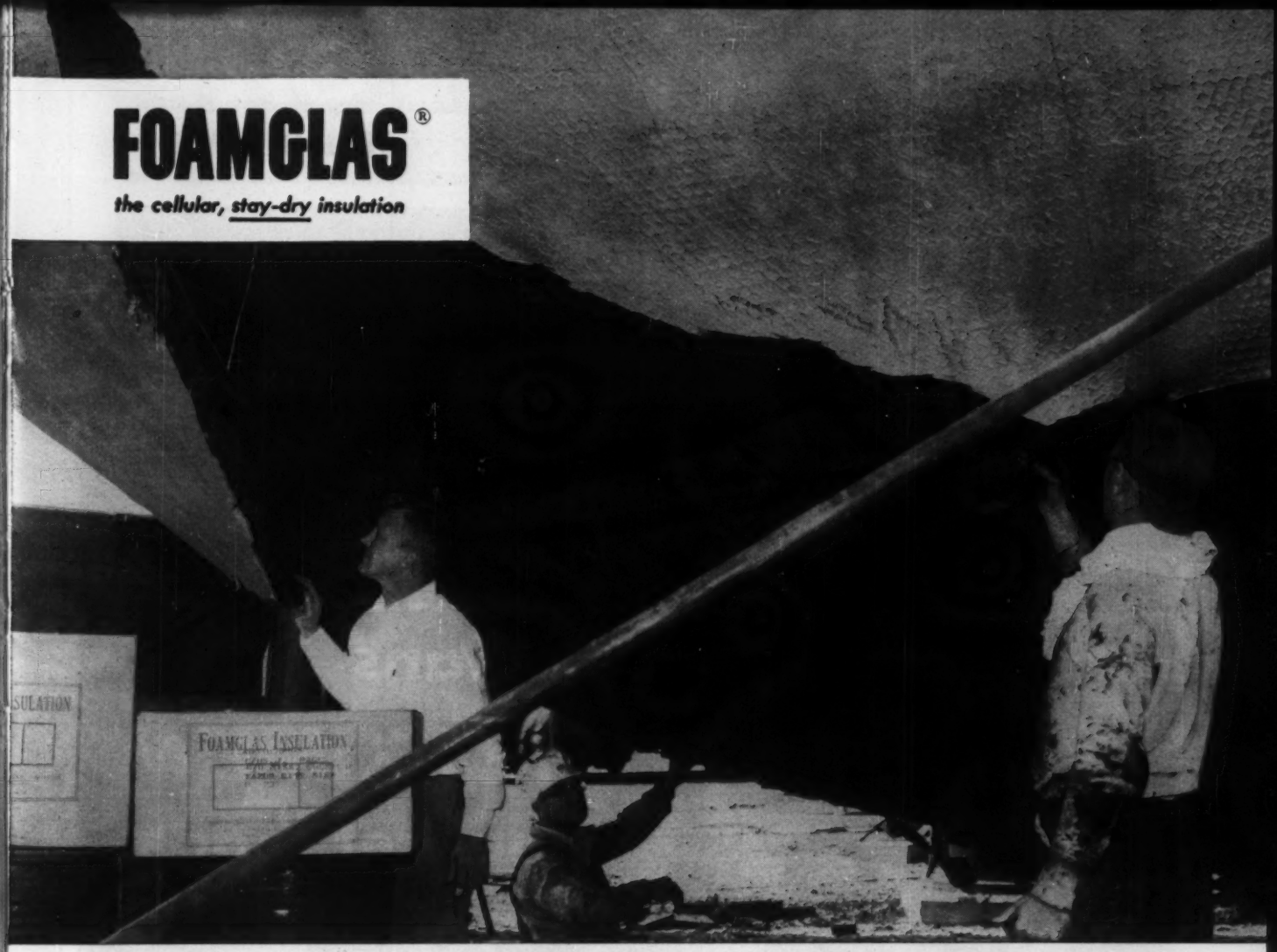

Mississippi Chemical Corporation reports . . .

"Long-lasting, stay-dry FOAMGLAS replaced failed organic insulation on our ammonia storage sphere"

Organic insulation on a 34°F. ammonia storage sphere failed in less than 4 years . . . so Mississippi Chemical Corporation replaced it with long-lasting, *stay-dry* FOAMGLAS. William B. Dunwoody, General Operations Manager at Mississippi's Yazoo City plant says:

"Moisture penetration and migration ruined the original organic insulation. We had to find a truly waterproof insulation to replace it. We picked FOAMGLAS because we know its sealed glass cells simply can't absorb or transmit moisture in any form.

"We reinsulated the 48 ft. diameter sphere in sections in order to keep it in continuous operation. As each section of failed insulation was removed, it was immediately replaced with FOAMGLAS. That meant that the new insulation had to be stored in the open nearby —and it rained nearly half the time the work was going on. Pouring rain never harmed the FOAMGLAS . . . proving to us that this remarkable insulation *is* completely waterproof. We're sure that it will give us long-lasting, dependable insulating performance without costly maintenance and repair," concludes Mr. Dunwoody.

Let Mississippi Chemical's experience be *your* guide to constant, highly efficient insulating performance with *stay-dry* FOAMGLAS. This unique cellular glass insulation is completely inorganic, cannot rot or deteriorate. It is fireproof and acid-proof. It will give you the maintenance-free insulating performance you need for your piping, tanks, spheres and other industrial equipment. Why not send today for a sample and our detailed, descriptive literature.

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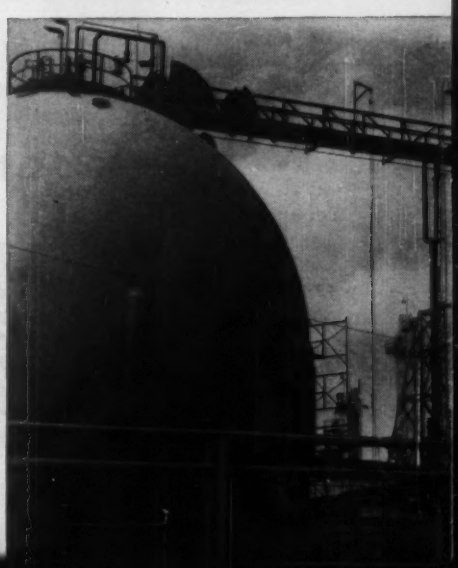
Mississippi Chemical avoided a costly shutdown of this ammonia storage sphere by reinsulating it in sections. As each section of the old, watersoaked insulation was removed, it was immediately replaced by waterproof blocks of FOAMGLAS. Insulation Contractor was North Brothers, Birmingham, Alabama.



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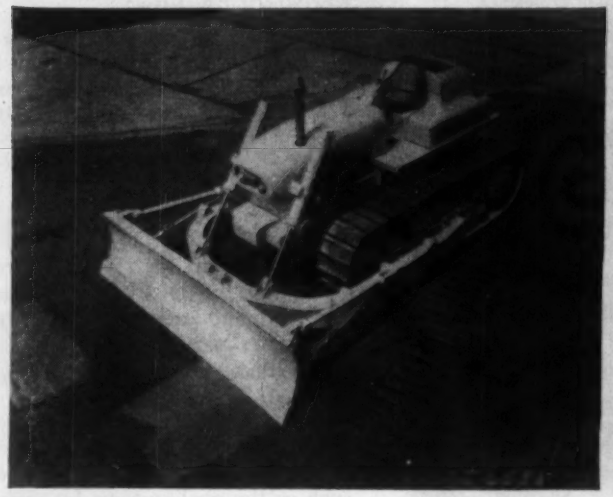

From Dozer To Drawbar . . .

Euclid's New Light Crawler Is Modern in Design

Looking quite a bit like its twin-engined big brother, Euclid's C-6 made its debut yesterday at the GM Powerama in Chicago. Also on display at the exhibition, which will remain open through Sept. 25, is a new 12-yd self-propelled scraper.

Whereas the TC-12 (Twin-engined Crawler with a total of 12 engine cylinders) developed a total of 388 hp the C-6—with only one 6-cylinder diesel engine—develops 194 hp However, many of the features of the twin have been incorporated in this new unit.

Maintaining proper track tension is automatic on the C-6. A hydraulic jack maintains pressure on the front idlers and an accumulator absorbs recoil should a large stone or other object get between the track and the sprocket.

Tracks are driven through an Allison torque converter and Torqmatic transmission. All shifting is accomplished under full power without loss of momentum, and the tractor can be shifted into reverse while still going in a forward direction. Three speed ranges forward and three reverse are provided with a top speed of 8.3 mph —the same as the larger model.

The front hood cover is hinge-mounted to permit access to the engine. The radiator is located at the rear to reduce heat and dust at the operator's position, and like the hood cover, the radiator is hinged to rotate out of the way for access to other components.

The 34,000-lb crawler is equipped with 22-in. track shoes, is 189 in. in overall length and 100 in. in width.

Limited production of the C-6 will commence immediately, and the units will be built at the company's Clinton Road plant. Price of the C-6 has not been determined as yet.

The scraper on display at the Powerama exhibit is designated the S-12. Powered by a 218-hp engine, it has a standard transmission with five forward and one reverse speed. Speeds range from 2.7 mph in first to 28.2 in fifth gear; unit reverses at 3.6 mph.

The unit is rated at 12 cu yd struck measure and 14 cu yd heaped. Empty, the scraper weighs 45,170 lb with 30,000 lb on the drive axle. Permissible payload is 40,000 lb.

Grade ability for the empty unit is rated at a maximum 39.8%; when loaded this is reduced to 25.5%.

Wheelbase is 21 ft 9 in.; overall length is 35 ft 3 in.; overall width is 9 ft 7 in.; and turning radius is 31 ft 2 in. The four-section cutting edge has a maximum 4-in. drop center and all blades are identical, reversible and interchangeable. Maximum width of cut is 9½ ft; depth of cut is 14 in.; depth of spread is 2¼ ft.

Scraper controls and steering are hydraulic. Tires are 26-ply, 26.5 x 25. Euclid Div., General Motors Corp., Cleveland 17, Ohio.

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BOOKS

Registration Laws

PROFESSIONAL ENGINEERING REGISTRATION LAWS—A compilation of state laws made by Alfred L. McCauley under sponsorship of the National Society of Professional Engineers. 614 pp. Trustee Publication Fund, Box 474, Jefferson City, Mo. $8.75.

This compilation of the basic requirements of the engineer registration laws of all the states, the territories and the District of Columbia will be found useful to engineers in many ways because of the manner in which the material has been assembled.

For example, there is a separate chapter for each state law, and in each chapter the first major requirements such as the qualifications for registration or provisions for reciprocity carry the same title number. Thus the qualifications for registration always can be found under Title 5 in each chapter regardless of what section number those qualifications may carry in the state law itself.

In Chapter 53 the author summarizes all the laws, using the same subject-numbering system, and includes references to important legal decisions bearing on that subject as well as his own comment on such matters as desirable changes in registration laws when they are amended. Additional comment by the author on such subjects as engineering practice by corporations and the constitutionality of registration laws is included in the latter part of the book.

The National Society of Professional Engineers plans to keep the book up to date by cumulative supplements and periodic revisions.

A Bit of History

PANAMA RAILROAD: 1855-1955: The Story of the First Transcontinental Railroad—by R. W. Hebard, 36 pp. Privately published by the author, 475 Fifth Ave., New York, N. Y.

This little pamphlet has been published to mark the 100th anniversary of completion of the Panama Railroad, the "first transcontinental line" and "the first railway to be built by Americans in a foreign land." Only 48 miles long, that rail line across the Isthmus of Panama turned out to be a gold mine for those who had the courage to put money into it. Built at a cost of around $7 million, the rail line paid dividends as high as 40% in one year and was sold to the French Canal Co. for about $20 million. The U. S. government

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bought it back in 1904, along with other property and equipment of the bankrupt canal company, all for $40 million.

Mr. Hebard tells briefly great difficulties encountered by the builders of that now little-known undertaking. Also included is comment on the construction of the panama Canal, which undertaking was materially helped by the availability of the rail line. Mr. Hebard speaks from first-hand knowledge on the latter, as he served as a resident engineer for the Isthmian Canal Commission from 1905 to 1909.

Drainage Handbook

HANDBOOK OF DRAINAGE AND CONSTRUCTION PRODUCTS—Edited by Walter H. Spindler. 579 pp. Armco Drainage & Metal Products, Inc., Middletown, Ohio. $5.00.

This new edition of Armco's well known handbook is much larger in size and considerably broader in scope than the earlier editions. Its coverage of culvert design and of the hydraulics of culvert size determination probably is more comprehensive than that of any textbook on hydraulics.

Naturally, all information relating to materials going into culverts is limited to corrugated metal pipes and multi-plate pipes and arches.

In addition to culverts, the handbook covers the use of corrugated metal pipe for sewers, for land and airfield drainage, for under-drainage of airfields, railway and highways, ditch erosion control, levee drainage, metal retaining walls and guard rails, and metal tunnel liners.

New Engineering Books

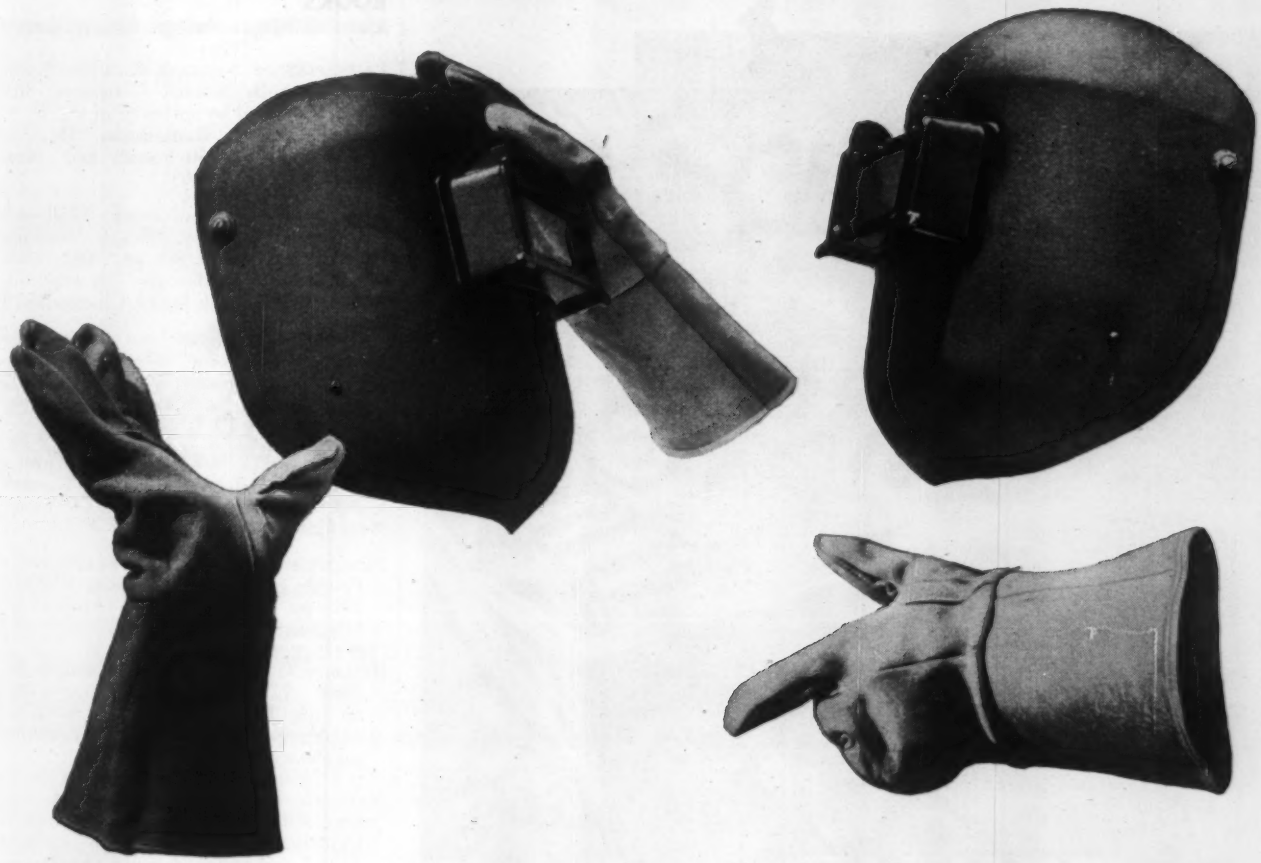
PRECAST CONCRETE—By Kurt Billig. 341 pp. D. Van Nostrand Company, 250 Fourth Ave., New York 3, N. Y. $7.50

ASTM STANDARDS IN BUILDING CODES—Specifications, Methods of Testing and Definitions—947 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $6.00

ENGINEERING METALLURGY — By L. F. Mondolfo and Otto Zmeskal, 397 pp. McGraw-Hill Book Company, 330 W. 42nd St., New York 36, N. Y. $7.50

AIR CONDITIONING REFRIGERATING DATA BOOK—By the American Society of Refrigerating Engineers, 234 Fifth Ave., New York 1, N. Y. $7.50

HYDRAULIC OPERATION AND CONTROL OF MACHINES—By Ian McNeil. 324 pp. The Ronald Press Company, 15 East 26th Street, New York 10, N. Y. $7.50



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A new addition to Lukens' complete line of carbon, alloy and clad steels, this new steel's unusual combination of properties suit it especially to applications in pressure vessels, bridges, shipbuilding, construction machinery and general industrial equipment. On problems of design, material selection, application and fabrication techniques, Lukens offers full technical assistance. If you would like further information on Lukens "T-1" steel, write for Bulletin 765. Address: Manager, Marketing Service, 774 Lukens Building, Lukens Steel Company, Coatesville, Pa.

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BOOKS

PRINCIPLES OF NUCLEAR REACTOR ENGINEERING—By Samuel Glasstone. 861 pp. Published by authority of the U. S. Atomic Energy Commission. D. Van Nostrand Co., 250 Fourth Ave., New York 3, N. Y. $7.95

THE MUNICIPAL YEAR BOOK: 1955—By Clarence E. Ridley, Orin F. Nolting, David S. Arnold. 588 pp. The International City Managers' Association, 1313 East Sixtieth Street, Chicago. $10

AUTOMOTIVE CHASSIS AND BODY — By William H. Crouse. 609 pp. McGraw-Hill Book Company, 330 W. 42nd St., New York 36, N. Y. $7.50

PROCEEDINGS OF A SYMPOSIUM ON CONCRETE SHELL ROOF CONSTRUCTION—Edited by P. J. Witt. 258 pp. Cement and Concrete Association, 52 Grosvenor Gardens, London S. W. 1. $9.00.

PRINCIPLES OF SEWAGE TREATMENT—Fourth Edition. By Willem Rudolfs. 130 pp. National Lime Association, Washington, D. C. $1.37

BUILDERS COST MANUAL—By Norman H. Hunt. 129 pp. Builders Research Associates, 260 W. 41st St., New York 36, N. Y. $7.50 including price—charge supplements for one year.

NATIONAL HOME ESTIMATOR—Fifth Edition. Edited by Cal. Pacific Estimators. Craftsman Book Co., 326 South La Brea Ave., Los Angeles 36, Calif. $3.00

SEARCH FOR A PURPOSE—By Arthur E. Morgan. 197 pp. The Antioch Press, Yellow Springs, Ohio. $3.00

Miscellaeous Notes

• **Copies of the papers** presented at the "Symposium on Some Aspects of Civil Engineering in the Atomic Age," held in connection with the centennial of the Polytechnic Institute of Brooklyn can be obtained from Prof. Chilton A. Wright of the Civil Engineering Department of this Institute, 99 Livingston St. Brooklyn 1, N. Y. Subjects reviewed were: Structural shielding; the role of the sanitary engineer in the nuclear-energy program; civil engineering problems; some problems of private development of nuclear power; and the 225-ft. sphere for a reactor project.

• **The various uses** for an Abney level are outlined in a little booklet entitled "Leupold Abney Level Handbook" issued recently by Leupold L. Stevens Instruments, Inc., 4445 N. E. Glisan St., Portland 13, Ore. $0.25.

• **Tables** of allowable concentric loads on T-Columns compiled, can be obtained from Mr. Evans, 61 Park Plaza, Daly City, Calif. $0.30.

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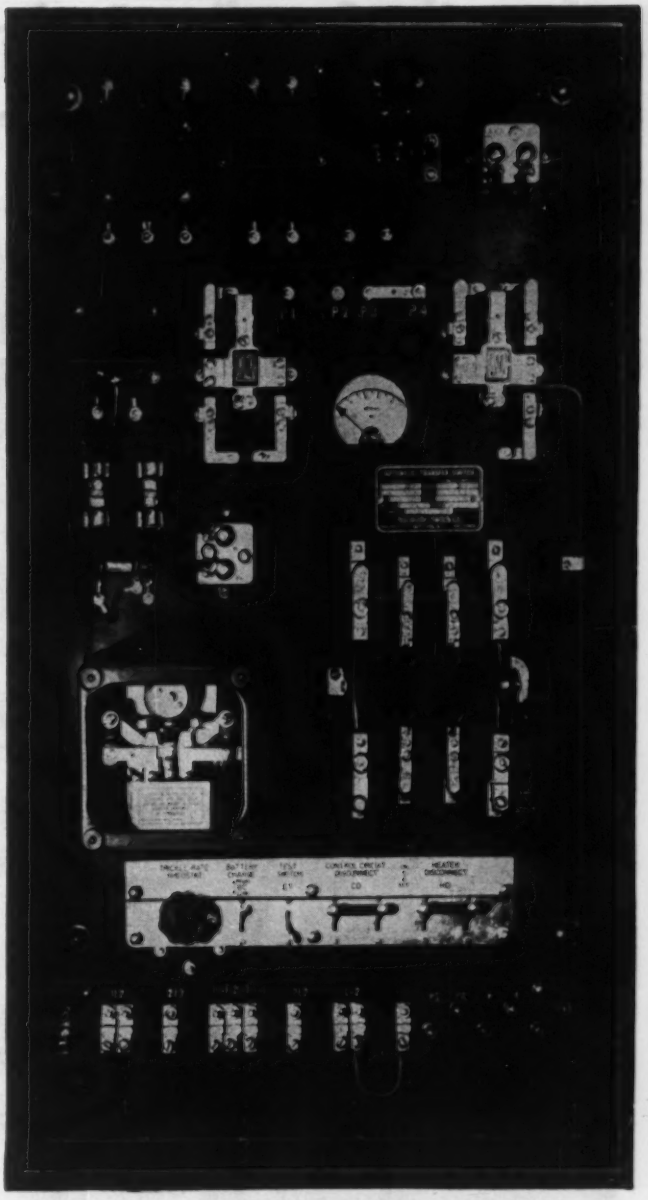

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WAUKESHA *Diesels*

290

OBITUARIES

• **George F. Young,** 75, a waterfront engineer and pioneer mayor of Sunshine Beach, Fla., died, June 21 in Rome. Early in his career he took part in railroad and industrial engineering in Tampa. Later, he went to St. Petersburg to lay out Lakewood Estates and in 1919 was engaged to lay out Sunshine Beach on Treasure Island. He also took part in platting most of the beach communities from Pass-A-Grille to Redington. While mayor of Sunshine Beach he planned the Snug Harbor Marina at Madeira Beach. Young studied engineering at the University of Pennsylvania.

• **John L. Beattie,** 56, former Cleveland city engineer and one of the original promoters of the Ohio Turnpike, died Aug. 10. He was engineer in charge of construction for Cleveland from 1916 to 1952, when he resigned to establish and serve as president of Western Reserve Engineering Co. Beattie was graduated from Ohio Northern University with a degree in civil engineering.

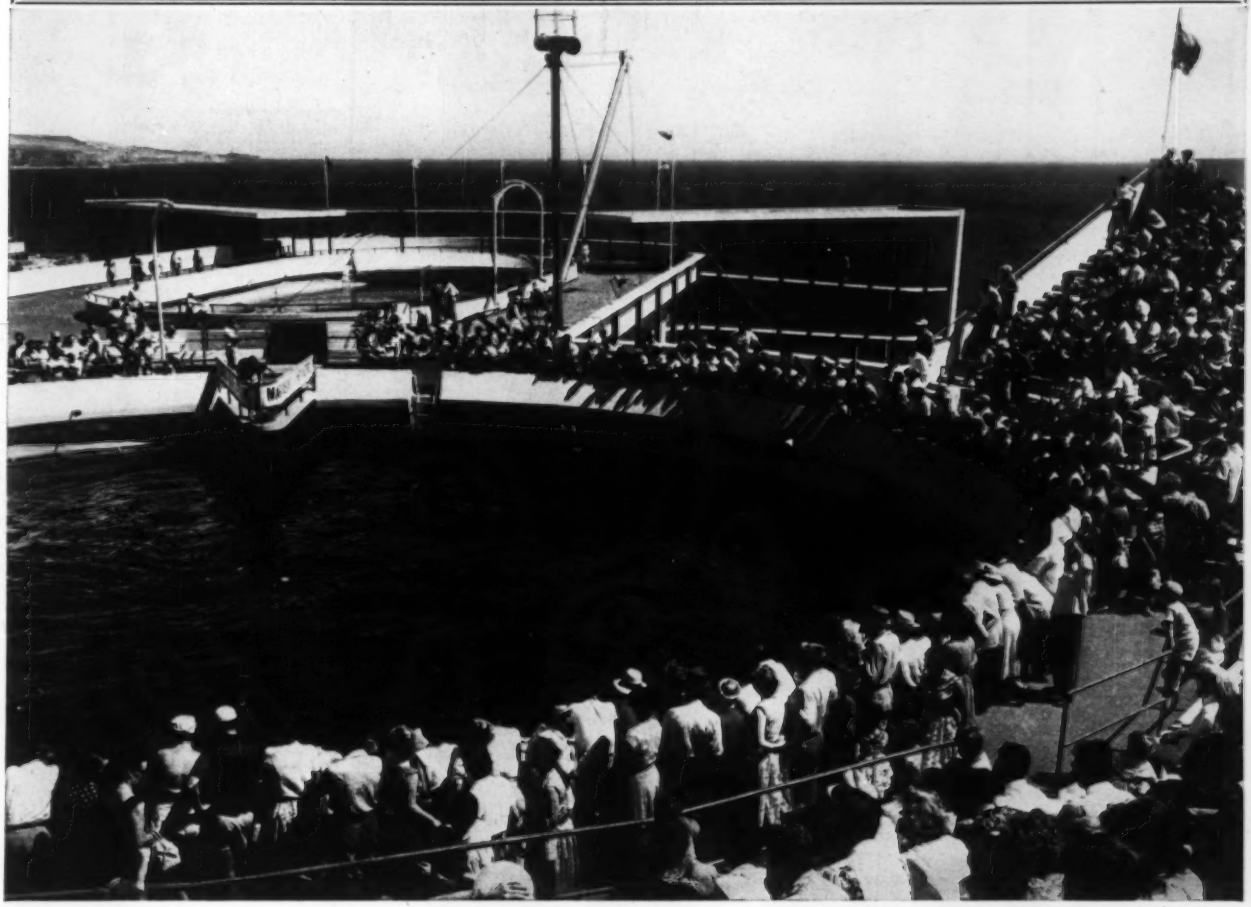
• **Fred J. Miller,** 64, head of Ready Mixed Concrete Co., Cincinnati, died late in July. During World War I he engaged in engineering at Langley Airfield in Virginia. In World War II he constructed the General Ammunition Depot at Memphis, Tenn., the South Plan Ammunition Depot at Terre Haute, Ind., and did primary work for the atomic power plant at Oak Ridge. Between wars, he formed Billiter, Miller & McClure Co. and laid out plans for northern Kentucky communities of Park Hills, South Hills and Crestview Hills.

• **Howard L. Kidder,** 60, founder of the former Stroman-Kidder Construction Co., Cleveland, and later of Kidder Construction Co., died July 31 in Cleveland.

• **Rowe Von Pleasanton,** 51, president of the Delaware construction firm of Pleasanton & Edgell, died Aug. 11. He was general superintendent for the firm of George & Lynch until 1946. Then, he and Louis E. Edell, also associated with George & Lynch, organized their own firm.

• **Asher W. Gray,** 51, Wabash County, Ind., surveyor for the past 22 years, died July 28. He was a civil engineering graduate of Purdue University, and a former member of the State Flood Control and Water Resources Commission.

ON THE NEWS FRONT WITH STRUCTURAL STEEL



Architects and engineers for the oceanarium were Pereira and Luckman, of Los Angeles; general contractor was George A. Fuller Co., New York and Los Angeles. The framework of Bethlehem structural steel was fabricated and erected by Pacific Iron and Steel Co., also of Los Angeles.

World's Largest Oceanarium

Sharks, giant rays, porpoises and other deep sea dwellers are on view at the new oceanarium at Marineland, Calif., on the Palos Verdes Peninsula. Built on a framework of Bethlehem structural steel the new oceanarium, called "The Marineland of the Pacific," has two deep-water tanks of 600,000 and 500,000 gal capacity. Three bands of viewing windows at three levels below the surface allow glimpses of some 5000 species of fish. Ocean water is pumped into the two big tanks at the rate of 2000 gal per min. In addition there are smaller displays, such as an underwater coral reef and its denizens, and an octopus grotto. Refrigeration and heating plants maintain greatly varying water temperatures for different species.

Bethlehem structural steel was left exposed and painted in pastel colors to achieve this unique architectural effect.

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BETHLEHEM STEEL

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Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Massachusetts—RECREATIONAL FACILITIES—BA 9/6—Commonwealth of Mass., Dpt. Natural Resources, 15 Ashburton Place, Boston, constr. recreational facilities, Woodland Rd. recreation area, October Mountain State Forest, Proj. 98-55, $150,000.

† **Me., Limestone**—WATER SUPPLY—BA On Or About 9/14—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., emergency water supply for diesel power plant, Loring Air Force Base, ENG-19-016-56-29, $25,000-$50,000. CD 7/27.

BUILDINGS—BA

▲ **Mass., Acton**—SCHOOL—BA 9/14—Acton-Boxford Regional High School Dist., Supt. Schools, High St., Acton-Boxford Regional High School, $1,300,000. Plans deposit $150. Perley F. Gilbert & Assocs., Inc., Sun Bldg., Lowell, archt. CD 1/13.

BUILDINGS—SLC

▲ **Mass., Newton**—HEALTH CENTER, etc.—Suburban Sidney Hill Inc., Mr. Joseph Kosnow, soon lets contract 1 Court St., Boston, superstructure for health center, outdoor and indoor swimming pools, dining hall, health club, tennis courts, etc. Florence St. $1,000,000. Isidor Richmond & Carney Goldberg, 16 Arlington St., Boston, archts. CD 6/6.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Henley-Lundgren Co., 193 Hartford Pike, Shrewsbury, Mass. CA $1,990,658, est $2.000,000. Contr. 51-195 hy. and bridge constr., West Springfield. CD 7/25, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Mass.—**Rufo Constr. Co.**, 1 Allen Rd., Brighton, Mass. LB $354,194, est. $405,000. hy. reconstr. East St. and Main St. Rte. 140, Foxboro and Wrentham;
Mass.—**Sacco Constr. Co.**, Suffolk St., South Bellingham, Mass. LB $300,663, est. $270,000. hy. reconstr. Boston (Rte. 9), Worcester Turnpike, Shrewsbury;
Mass.—**Scavone Constr. Co.**, 38 Hope Ave., Worcester, Mass. LB $271,226, est. $270,000. hy. reconstr. Main St. Rte. 117, S 94 (2), Bolton. Bids Aug. 16. CD 7/27 and 8/4.

DiMinico & Palotta, 6 Pleasant St., Malden, Mass., LB, $544,321, est. $750,000. Contr. 221, Section 132, Framingham trunk interceptor sewer, Needham-Wellesley town line to Sudbury Aqueduct, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids Aug. 18. CD 8/2.

† **D. C. Loveys Co.**, 171 Harvey St., Cambridge, Mass., LB, $688,900. test and checkout facility Naval Ammunition Depot, NOY 87265, Spec. 46370, HINGHAM, MASS. Dist. P. Wks. Office, IND, 495 Summer St., Boston 10, Mass. Bids Aug. 18. CD 7/19.

George Brox, Inc., 70 Park St., Hudson, Mass. LB $91,376, est. $90,000. constr. approx. 7,600 ft. streets, drains, appurtenances, LEXINGTON, MASS. Town, Bd. Selectmen, Massachusetts Ave., Lexington, Mass. Whitman & Howard, 89 Broad St., Boston, Mass., engrs. CD 4/4, under Sewers, etc.

N. J. Adelman Constr. Co., 41 Wallis Rd., Brookline, Mass. LB $111,900, est. $115,000. Contr. 14 sewage pumping station, accessory work, Industrial Park, NATICK, MASS. Town, Bd. P. Wks., Middlesex Ave., Natick, Mass. Bids Aug. 15. CD 8/9.

▲ **RHODE ISLAND**—State of R. I. and Providence Plantations, F. A. Adams, purch. agt., State House, Providence,
M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB $2,384,587. Fox Point Interchange, North-South Freeway from Brook St. ramps divided roadway, piers on Southwater St. bridges, etc. R. I. Contr. 5511, F.A.P.UI-03 (4) Contr. No. 2 Providence. Bids Aug. 17. CD 8/3.

BUILDINGS—LB & CA

Gerald E. Morrissey, First Natl. Bank Bldg., Bennington, Vt., CA Approx. $500,000. HIGH SCHOOL, School St., BENNINGTON, VT. R. C. Diocese, Most Rev. Edward F. Ryan, DD Bishop of Burlington, Msgr. Thomas J. Burke & Rev. Valmore Desautells, Trustees, Chancery Office, Burlington, Vt. Bids Aug. 3. CD 8/2.

Joseph Rugo, Inc., 581 Boylston St., Boston, Mass. CA $537,537, est. $550,000. Hunt Memorial HOSPITAL, Lindall Hill, DANVERS, MASS. Town, Daniel J. McFadden, mgr., Town Hall, Danvers, Mass. CD 8/3, under LB.

▲ **M. S. Kelliher Co.**, 294 Washington Ave., Boston, Mass., LB, $1,870,922. P-M 26, Contr. No. 1, ADMISSIONS TREATMENT BLDG. State Hospital, TAUNTON, MASS. State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Aug. 19. CD 8/3.

▲ **Vara Constr., Inc.**, 719 Huntington Ave., Boston, Mass., LB, $2,078,352, est. $2,000,000. JUNIOR HIGH SCHOOL, Cabot Reservation, WALTHAM, MASS. City, City Hall, Waltham, Mass. Bids Aug. 18. CD 7/26.

J. H. Hogan Co., 78 Butler St., New Haven, Conn., CA, $671,600, est. $650,000 CITY GARAGE, MAINTENANCE, SUPPLY HOUSE, WAREHOUSE, Middletown Ave. and Fawn St., NEW HAVEN, CONN. City, City Hall, New Haven, Conn. Bids Aug. 9. CD 8/16, under LB.

▲ **Associated Constr. Co.**, 1010 Wetherfield Ave., Hartford, Conn., CA, $1,357,000, JUNIOR-SENIOR HIGH SCHOOL, STONINGTON, CONN. Town, c/o Bd. Educ., Stonington, Conn. CD 8/2, under LB.

▲ **Anderson Fairoaks Constr. Co.**, 145 S. Marshall St., Hartford, Conn., LB, $2,031,000. Proj. BI-D-183, SCIENCE BLDG., University of Connecticut, STORRS, CONN. State P. Wks. Comr., State Office Bldg., Hartford, Conn. Bids Aug. 17. CD 7/20.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

NEW JERSEY and PENNSYLVANIA—BA 9/15—At Office Joseph K. Costello, exec. dr. Delaware River Port Auth., Administration Bldg., Bridge Plaza, Camden 1, N. J.
Contract G-5, Walt Whitman Bridge-Gloucester, N. J., approaches, bridges over Crescent Blvd. and Black Horse Pike for new bridge between Packer Ave., Phila., Pa. and Gloucester, N. J.
Contract P-7, Walt Whitman Bridge-Phila. Pa. approaches, roadway grading, drainage, 28 St. and Vare Ave. to Moyamensing Ave. and separation structures and city street changes at Moyamensing and Passyunk Aves., for new bridge between Packer Ave., Phila., Pa. and Gloucester, N. J. Plans deposit $10 each; adv ENR 8/25. CD 9/26/52.
New York—SIGNAL EQUIPMENT—BA 9/23—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, installing signal equip. for Third Ave. line, 149 St. to 219 St., Bronx Boro., Contr. S 68.

BUILDINGS—BA

Md., Baltimore—RELIGIOUS CENTER—BA 9/8—Har Sinai Congregation of Baltimore, 6300 Park Heights Ave., Zone 15, concrete, steel, masonry religious center. $500,000. Buckler, Fenhagen, Meyer & Ayres, 24 St. and St. Paul Ave., Zone 18, archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Great Lakes Dredge & Dock Co.**, Morgan Bldg., Buffalo, N. Y., LB $3,684,751, (1 bidder), channel imprvs. at Chimney Island, near Ogdensburg, St. Lawrence Co. Spec. No. PA-5-11017, St. Lawrence Contr. No. 23, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Aug. 22. CD 8/3.

The Sicilian Asphalt Paving Co., Paige Ave. and Duck St., Brooklyn, N. Y. LB $408,000. service road and utilities to hangar sites, New York International Airport, Contr. NYA-710-001, IDLEWILD, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids July 26. CD 6/27.

NEW JERSEY—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
South Jersey Constr. Co., 207 Adams St., Riverside, N. J., CA, $692,874, Contract W-8, paving, lighting, other work in connection with constr. of Service areas 6S and 6N on N. J. Turnpike, Mercer Co. Bids Aug. 11, awarded Aug. 18. CD 8/19, under LB.

▲ **Sanctis Constr. Co.**, 410 Marlow St., Pittsburgh, Pa. LB $1,176,320. Mill Creek Dam, ALTOONA, PA. Altoona City Auth., Police Courtroom, City Hall, Altoona, Pa. Bids Aug. 3. CD 6/24.

▲ **Intercounty Constr. Corp.**, Box 329, Hyattsville, Md. CA $1,015,447. Contr. 18, transmission and distr. lines, ALTOONA, PA. Altoona City Auth., Police Courtroom, City Hall, Altoona, Pa. CD 6/24.

BUILDINGS—LB & CA

Taylor Homes, c/o John H. Adler, 1 N. Merrick Ave., Merrick, N. Y. Owner Builds. $360,000. 60 HOUSES on tract on Provost St. north of Montauk Hy., BELLPORT, N. Y.

Bonnie Brae Homes, c/o Tryion Realty Co, 98-89 Queens Blvd., Forest Hills, N. Y. Owner Builds. $390,000. 30 HOUSES on tract at Jones Land and W. 22 St., HUNTINGTON, N. Y.

▲ **Lakeview Village at Artist Lake**, c/o Klein & Parker Realty Co., 1391 Northern Blvd., Roslyn, N. Y. Owner Builds. $1,750,000. 250 HOUSES on tract on Jericho Turnpike, MIDDLE ISLAND, N. Y.

▲ **Atlantic Shores Estates**, c/o Karl Bloch, archt., 7 Landsdown Ave., Merrick, N. Y. Owner Builds. $1,800,000. 140 HOUSES on Tract on Weidner Ave., OCEANSIDE, N. Y.

South Wind Estates Homes, c/o Bonded Realty Corp., Sunrise Hy., Lindhurst, N. Y. Owner Builds. $840,000. 60 HOUSES on tract on Udall Rd. south of Sunrise Hy., WEST ISLIP, N. Y.

Alyson Homes, c/o Krugman & De Petro, 1130 Main Ave., Clifton, N. J. Owner Builds. $400,000. 20 HOUSES on tract at Fourth St. and Marlot Ave., FAIRLAWN, N. J.

Northfield Estates, c/o Krugman & De Petro, 1330 Main Ave., Clifton, N. J. Owner Builds. $450,000; 15 HOUSES on tract at Northfield and Gregory Aves., WEST ORANGE, N. J.

▲ **Mellon Stuart Co.**, 210 E. Park Way, Pittsburgh, Pa. CA $2,000,000. 6 story MEDICAL-COMMERCIAL BLDG., 2 parking levels, PITTSBURGH, PA. John Whiteman & Co., Frick Bldg., Pittsburgh, Pa. Emory Roth & Assoc., 575 Madison Ave., New York, N. Y., archts. Awarded Aug. 10.

Philip Macht, 11 E. Fayette St., Baltimore 2, Md. Owner Builds. $620,500. 71 two story masonry HOUSES, 4400 Block Eldone Rd., 4300 and 4500 blocks Parkton St., 1600 block Ingram Rd., 1500 block Heathfield Rd., 4300 block Robertson St., 4700 block Shamrock Ave., BALTIMORE, MD.

Virginia Home Builders, Inc., 825 Lenton Ave., Baltimore, Md. Owner Builds. $477,000. 53 masonry HOUSES, Lenton Ave. and Marlau Dr., BALTIMORE, MD.

▲ **Joseph F. Nebel Co.**, 3408 Wisconsin Ave. N.W., Wash., D. C. CA $1,344,900. (7 bidders) 2 story, brick St. Mary's Preparatory SCHOOL, GARRETT PARK, MD. Sisters of Holy Cross, Eastern Ave. and Bunker Hill Rd. N.E., Wash., D. C. Bids Aug. 15, awarded Aug. 18. CD 7/9.

Wildberger-Best Constr. Co., Inc., 2025 E. North Ave., Baltimore 13, Md., LB $769,800. masonry, concrete, steel Middlesex Elementary SCHOOL, Marlyn Ave. and Bennett Rd., near Essex, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Aug. 16. CD 8/3.

▲ **Skinker & Garrett**, 2607 Connecticut Ave. N.W., Wash., D. C., CA, $1,382,000. NURSES DORMITORY, WASH., D. C. Georgetown University, 37 and O Sts. N.W., Wash., D. C. Bids Aug. 10. CD 8/12, under LB.

Homeland Constr. Co., 1404 K St. N.W., Wash., D. C., Owner Builds, $600,000. 40 brick, cinder block HOMES, Galloway and 7 Sts. N.E., WASH., D .C.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

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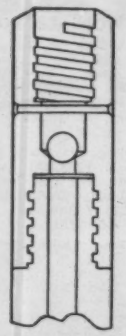
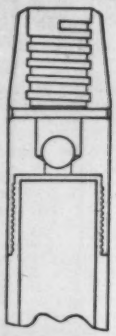
Thick, heavy, rugged barrel and head increase service life by 100%!	Thin, weak barrel and head are easily damaged.
	
Note the thick shoulder of the LYNAC Head.	Compare the thin, easily cracked shoulder of the standard head.

*Patent applied for

Acker engineers have done it again! By improving the design and construction of the standard split tube samplers, Acker engineers increased the service life of their new LYNAC Sampler by over 100%! Look over the drawings at the left and you'll see why. Then, write for literature describing Acker's new LYNAC Sampler.

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EXTRA DURABILITY

- Genuine *hand stitched* leather case with rust resistant metal case liner.
- Line, built up by series of platings, resists rust and corrosion . . . won't chip, crack or peel.

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Available with graduations either in feet, 10ths and 100ths, or feet, inches and 8ths. Choice of hook or standard ring. 25, 50, 75 and 100 ft. lengths.

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378

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Tampa—BA 9/15—City, City Hall, Div. XG 17, Dale Mabry ejector station with 150 gpm capacity pneumatic sewage ejector; Div. XG 21, Bayshore Pumping Station with two 2,700 gpm and two 1,000 gpm capacity vertical sewage pumps; Div. SG 23, Knights Ave. Pumping Station with two 280 gpm capacity vertical sewage pumps; Div. SG 26, Swann Ave. Pumping Station with three 800 gpm capacity vertical sewage pumps; Div. SG 28, Neptune Bay ejector station with one 250 gpm capacity pneumatic sewage ejector. Plans deposit $25. Greeley & Hansen, 220 South State St., Chicago 4, Ill., engrs., adv. ENR 9/1.

BUILDINGS—SLC

▲ **Ky., Louisville**—PARKING GARAGE—Commonwealth Life Insurance Co., 110 S. 5 St., soon lets contract parking garage, Broadway near 4 St. Over $1,000,000. Nevin & Morgan, Starks Bldg., archts. E. R. Ronald & Assocs., 554 S. 3 St., engrs. CD 5/5.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Jefferson, Columbia,

S. C.—American Constr. Co., R.F.D. 4, Columbia, S. C. LB $80,307 (5 bidders), bit. surf. 9.577 mi. Roads S-149, S-172, S-294, S-296, S-238, S-239, S-194, S-156 and S-588, S. C. Docket No. 13.341, Chesterfield Co.;

S. C.—Claussen-Lawrence Constr. Co., 1394 Gwinnett St., Augusta, Ga., LB $74,671 (4 bidders), hot laid b. conc. surf. course and hot plant mix sand asph. resurf. 16.3 mi. U. S. Rtes. 1 and 25 and State Rtes. 125 and 421, S. C. Docket No. 2-1024, Aiken Co.;

S. C.—J. F. Cleckley & Co., Orangeburg, S. C., LB $104,361 (5 bidders) bit. surf. 10.661 mi. Roads S-31, S-263, S-309, S-177, S-141 and S-179 thru S-184, S. C. Dockets Nos. 34.290 and 34.291 F.A. Proj. No. S-929 (1), Marion Co.; LB $78,513 (7 bidders) bit. surf. 9.444 mi. Roads 22, 13, 82, 84, 193, 322, 323 and 327, S. C. Dockets Nos. 2.381 and 6.334, Aiken and Barnwell Counties;

S. C.—Ralph W. Crowe, Woodruff, S. C., LB $98,414 (6 bidders) bit. surf. 8.155 mi. Roads S-272, S-442, S-991, S-234, S-424, S-376, S-341 and S-1031, S. C. Docket No. 42.428, Spartanburg Co.;

S. C.—Kraft & Newell, Florence, S. C., LB $102,842 (6 bidders), bit. surf. 12.363 mi. Roads 172, 176, 219 and 220, S. C. Dockets Nos. 17.305 and 17.306, F.A. Proj. Nos. S-911 (1) and S-922 (1), Dillon Co.;

S. C.—Peden Constr. Co. Inc., 52 Mayberry St., Greenville, S. C., LB $810,120 (10 bidders) bit. surf. 21.306 mi. U. S. Rte. 29, S. C. Docket No. 4.435, F.A. Proj. No. F-2600 (1) Part 2, Anderson Co.;

S. C.—Sharpe Constr. Co. Inc., Turbeville, S. C., LB $125,125 (7 bidders) bit. surf. 14.118 mi. Roads 192, 52, 74 and 196, S. C. Dockets Nos. 15.308 and 15.309, F.A. Proj. No. S-242 (3), Colleton Co. Bids Aug. 18. CD 8/10.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Jefferson, Columbia,

McMeekin Constr. Co., Cheraw, S. C. LB $1,922,733, 7,300 ft. bridge, 26 ft. roadway, incl. 303 ft. deck girder swing span over Broad River, incl. placing of filter blanket and riprap on end of Burton approach fill to bridge near Beaufort, Beaufort Co. Bids Aug. 18. CD 8/10.

Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La., LB $659,681, two 1 m.g. elevated water storage tanks, control valves, connecting piping, GRETNA, LA. East Jefferson Water Works Dist. No. 1, 3600 Jefferson Hy., New Orleans, La. Bids Aug. 11. CD 8/2.

BUILDINGS—LB & CA

▲ **Southeastern Constr. Co.**, 204 High St., Morgantown, W. Va., CA $1,400,000. misc. PLANT BLDGS., RAVENSWOOD, W. VA., Kaiser Aluminum & Chemical Corp., Ravenswood, W. Va. CD 9/26/54, under CA.

Southern Builders, Inc., Box 1815, Shreveport, La. LB $528,000. (5 bidders) 3 story, bsmnt., penthouse CLUB, SHREVEPORT, LA. Shreveport Club, Washington-Youree Hotel, Shreveport, La. Neild & Somdal, Box 1815, Shreveport, La., archts.

▲ **Barge-Thompson Co.**, 136 Ellis St. N.E., Atlanta, Ga. CA $1,406,000. 5 story EXCHANGE addn., Sixth and Chestnut Sts., LOUISVILLE, KY. Southern Bell Telephone & Telegraph Co., 51 Ivy St. N.E., Atlanta, Ga. Wagner & Potts, Fincastle Bldg., Louisville, Ky., archts. Awarded Aug. 15.

▲ **Edward Rose**, 14900 Linwood St., Detroit, Mich., Owner Builds. $1,800,000. 150 HOMES, LOUISVILLE, KY. Beneicke & Lorenz, 19740 James Congress Bldg., Detroit, Mich., archts.

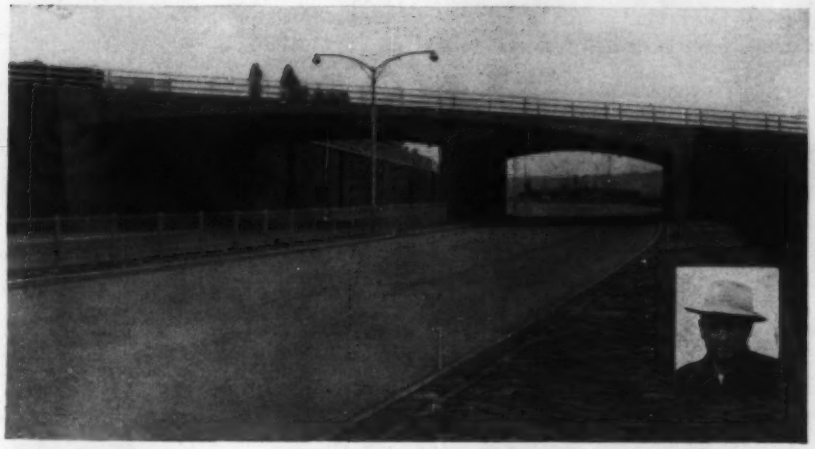
MIDDLE WEST

HEAVY CONSTRUCTION—BA

INDIANA—BA 9/14—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4,

Lake Co.—Contract C-7, grading, drainage, structures, paving approx. 2.12 mi. Construction Section C-7, Indiana-East-West Toll Road beginning at point approx. 3,343 ft. westwardly from center line of Cline Ave. in City of Hammond at Toll Road Station 675 plus 00 and extending eastwardly a distance of about 11,200 ft. to point at Toll Road Station 787 plus 00, said point being westwardly about 11,845 ft. from centerline of Durbin St. in City of Gary. Plans deposit, standard specifications, $5; Plans, Special Provisions and Proposal Forms, per set, per construction section $25. H. D. Hartman, ch. engr.; adv. ENR 8/25. CD 2/10/54.

(Continued on page 80)

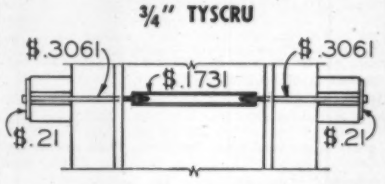


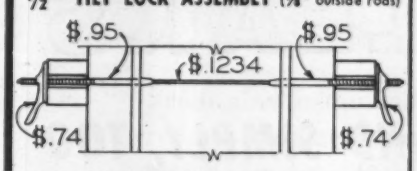
48th Street Twin-Arch Bridge on Queen's Midtown Expressway; contractors: Gall Contracting Company, Inc. Inset: Herbert E. Smith, superintendent

Richmond Study Points Way To Concreting Economies

Although the various methods of form tying affect both the cost and quality of concrete form work, little has been published on this subject. The purpose of this Richmond study was to analyze the relative merits of the two methods principally used today for tying medium and heavy concrete forms — Tyscrus and Tilt Locks. The results of this analysis — as the following excerpted data shows — disclose that one of these methods has much to recommend it over the other. Richmond Screw Anchor Company makes both products, so there can be no question of bias in the presentation.

Comparative Analysis of Form-Tying Methods for Medium and Heavy Concrete Work*





Items used for each tie, their cost and freight weight

1—¾ x 10" Tyscru	$ .1731	.87 lbs.	1—⅜ x 10" Threaded Rod	$ .1234	.44 lbs.
2—¾ x 15" Tylags @ .3061	.6122	4.1 lbs.	2—20" Outside Rods @ .95	1.90	6. lbs
2—4½ x 5 x ¾" Flat Washers @ .21	.42	4 lbs.	2—5" dia. Clamps @ .74	1.48	4. lbs.
	$1.2053	8.97 lbs.		$3.5034	10.44 lbs.
Less 90% Credit on return of Working Parts	.9290		No return of Working Parts	0.00	
	$ .2763			$3.5034	

Analysis of use cost, per tie, based on 20 re-uses of working parts

Tyscru	$ .1731	Threaded Rod	$ .1234
1/20th Working Part Cost	.0052	1/20th Working Part Cost	.17
	$ .1783		$ .2934
Plus freight to the job on	8.97 lbs.		
and return freight on	8.1 lbs.	Plus one way freight on	10.44 lbs

Steps involved in installation of each type

No pre-assembly required	Must be preassembled by screwing inside rod into female ends of the outside rods, 20 turns for each end. Assembled rods are pushed through holes in both sides of the form. Clamps are slid on outside rods, up to the wales and then turned three turns each to lock in place.
Flat Washer is placed on Tylag. Tylag inserted in hole in the form and screwed into coil of the Tyscru 7 or 8 turns for each Tylag	HANDLING 9.81 lbs. per tie
HANDLING 4.13 lbs. per tie	Thread of Inside Rod concealed in end of Outside Rod. No way of checking to be sure how far it is threaded in.
Thread of Tylag visible beyond coil assuring full strength	In stripping Clamps are unseated by backing off three turns then sliding off the rods. Using the clamp as a wrench the outside rods are then turned out of the holes.
In stripping Tylag is backed out of each side of the form.	

*Facts shown here based on 12" wall, safe load of ties 9,000 lbs.

Equally important are three additional facts which the analysis, by its nature, does not bring out:

1) The actual mechanical operation of putting a Tilt Lock Assembly together is much more time-consuming than is the Tyscru operation.
2) There is only one threaded connection with the Tyscru. The thread is coarse and the Tylag thread, being buried in the concrete, is self-cleaning when it is removed. The outside threads on the Tilt Lock Rods are subject to becoming scoured up by spillage of concrete and require cleaning.
3) The Tyscru System can be readily equipped with Tycones as spreaders, if desired, which cannot readily be done with a Tilt Lock System.

By the nature of the Tyscru operation, Richmond Tyscrus produce more accurate form work. Tyscru Systems are planned for individual jobs and special requirements are on hand at the job as required. The threaded rods, when produced on the job, often are not available as needed and are costly to produce. When ordered from the manufacturer, they usually are furnished as fill-ins and so often do not fit the needs of the job and run up the cost.

CONCLUSION: The Richmond Tyscru System effects great savings, in time, labor and cost, over the Tilt Lock System.

On all your medium and heavy construction work, Richmond Tyscrus will also give you extra strength. The published ultimate strength of the Tyscru described above is 16,000 lbs., that of the Tilt Lock Assembly 12,000 lbs.—both are sold for 9000 lbs. safe-load. Furthermore, repeated impartial tests on all sizes of Tyscrus show that their *ultimate* strength far exceeds their *published* safe load. You can pour fast and heavy in all weather with these resistance-welded ties because they have extra strength built in.

Complete information on Richmond's Tyscru Systems is contained in the 1955 catalogue of Richmond-engineered Tying Devices. Write for your copy. If you have any specific problems, Richmond's Technical Division or field service men will be glad to submit recommendations, drawings and proposals. Write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 South Fourth St., Saint Joseph, Mo.

(Continued from page 78)

BUILDINGS—BA

▲ **O., Sandusky**—HIGH SCHOOL—BA 9/20—Bd. Educ., High School Bldg., high school. $4,000,000. Plans deposit $50. Thomas D. McLaughlin & John J. Keil, 500 Dominion Bldg., Lima, archts. CD 11/8.

Ind., Cumberland—SCHOOL—BA 10/15—Township Bd., Don Davidson, trustee, Cumberland, grade school. $450,000.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
Visintine & Co., 1315 Edgehill Rd., Columbus, O. CA $1,234,000, est. $1,215,500 Type T-35 on B-70 and structures 0.666 mi., U. S. R. 33, 15.07 (city of Columbus) U-233 (6), Franklin Co. CD 8/17, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis,
Union Building & Constr. Co., 631 Main Ave., Passaic, N. J., LB $5,545,643 (7 bidders) Contract C-8, grading, drainage, structures, paving approx. 1.9 mi. in Constr. Section C-8, Indiana East-West Toll Road, City of Gary, Lake Co. Bids Aug. 17. CD 7/29.

▲ **ILLINOIS**—State Div. Hys., Dpt. P. Wks. & Bldgs., Centennial Bldg., Springfield,
McDougal-Hartmann Co., 1500 W. Adams St., Peoria, Ill., CA, $1,433,000. c. conc. 6.08 mi. Ill. 13, Jackson Co. Bids June 24, awarded Aug. 16. CD 6/30, under LB.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
L. G. Arnold, Inc., 201½ N. Dewey St., Eau Claire, Wis., CA $520,785. City Street structure and approaches 0.554 mi. Proj. T 0-0 (2), Rock Co. Bids Aug. 2. CD 8/8, under LB.

BUILDINGS—LB & CA

▲ **The Shirmer-Peterson Co.**, 6830 Beaver Ave., Cleveland 4, O., LB $4,177,251, est. $3,500,000. (1 bidder) 5 story OUT-PATIENT DEPT. BLDG. and pertinent facilities, CLEVELAND, O. City, Dpt. Health and Welfare, City Hall, Cleveland 14, O. Bids Aug. 18. CD 7/29.

▲ **Twin Oaks Constr. Co.**, 1900 Euclid Bldg., Cleveland 15, O., Own Forces $1,500,000. 101 HOMES, Oak St. west of Woodland Ave., ELYRIA, O. Anderson & Dracon, 4517 Brookpark Rd., Cleveland 29, O., archts. Awarded Aug. 12.

Durabilt Homes, Inc., Lawrence, Ind. Owner Builds, $500,000. HOMES in Lawrence residential district, LAWRENCE, IND.

▲ **C. A. Thornstrom**, 401 S. St. Louis St., Skokie, Ill., CA $1,250,000. APARTMENT, 2020 Farwell Ave., CHICAGO, ILL. Lynne Apartments, 2019 Morse Ave., Chicago, Ill. Fred C. Weber, 5555 N. Sheridan St., Chicago, Ill., archt. Awarded Aug. 12.

▲ **C. H. Peterson Constr. Co.**, 616 National Bldg., Minneapolis, Minn., and **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn., LB $1,716,700 (5 bidders) general contract SENIOR HIGH SCHOOL, Keith St., EAU CLAIRE, WIS. Bd Educ., 118 Mappa St., Eau Claire, Wis. Bids Aug. 17. CD 7/14.

▲ **Flour Bros.**, 48 Otter St., Oshkosh, Wis., CA Est. $1,300,000. general contract 1 story, 258x345 ft., concrete, steel, brick, blocks, WAREHOUSE and SALES BLDG., MADISON, WIS. Deere & Co., 2100 Winnebago St., Madison, Wis. Bids Aug. 1.

▲ **Miller Homes, Inc.**, 4727 N. Woodward St., Royal Oak, Mich. Owner Builds. $2,000,000. 50 brick ranch HOMES, BEVERLY HILLS, MICH.

Whitehead & Kales Co., 50 Haltiner St., Detroit 18, Mich. CA $652,000. structural steel constr. 200,000 sq. ft. PLANT, 14 Mile Rd. and Grossbeck, DETROIT, MICH. The Cross Co., 4250 Bellvue St., Detroit, Mich. Bids June 28. CD 6/21.

Associated Home Craftsman, Inc., c/o William Gross, 9107 Linwood St., Detroit, Mich. CA Est. $650,000. 50 brick HOMES, Cook and McCann Sts., ECORSE, MICH. William Gross, 9107 Linwood St., Detroit, Mich.

▲ **Pearson Constr. Co.**, Benton Harbor, Mich., CA $1,500,000 1 and 2 story ADMINISTRATION BLDG., ST. JOSEPH, MICH. Whirlpool Corp., D. W. Alexander, vice pres., St. Joseph, Mich. Bids July 27. CD 7/12.

Fairbanks Co., 5211 Thirteen Mile Rd., Warren, Mich. Owner Builds. $975,000. 70 brick ranch HOUSES, 13 Mile and Mound Rd., WARREN, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† **Okla., Altus**—RUNWAYS—BA 9/7—U. E. Eng., Box 61, Tulsa, Zone 2, runways, taxiways, non-traffic area markings, Altus Air Force Base, $75,000. CD 8/19.

Minnesota—TELEPHONE LINES—BA 9/13—Federated Telephone Co-operative, Chokio, 749.39 mi. telephone lines, Big Stone, Swift, Stevens, Pope and Traverse Counties, Communications Consultants, 1114½ Front St., Fargo, N. D., engrs.

† **Tex., Big Spring**—WATER STORAGE TANK—BA About 9/16—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., elevated water storage tank, Webb Air Force Base Auxiliary Field, ENG-29-005-56-16. CD 9/11/53.

▲† **Kansas**—BA On Or About 9/20—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., outlet works Stage II and No. 13 Highway by-pass Tuttle Creek Dam and Reservoir located in Riley Co., consisting of constr. approach channel, intake tower and operating house, upstream and downstream transition conduit connecting to existing conduit constr. stilling basin, CIVENG-23-028-56-21. CD 6/1/44.

† **Tex., Orange**—DOLPHINS, etc.—BA 9/20—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16 U. S. Naval Station, New Orleans (Algiers) La. relocate, strengthen and provide addnl. dolphins, repaint pontoons, Naval Station, NOY 88968, Spec. 47869. Plans deposit $10.

† **Mont., Glasgow**—ROCKET STORAGE BLDG.—BA 9/22—U. S. Eng., City-County Bldg., Walla Walla, Wash., rocket storage bldg. GAR-1 bulk storage, igloos, gate house, bldgs., development of sites, utilities, etc. at Glasgow Air Force Base, ENG-45-164-56-7. Plans deposit $100. CD 2/14/55.

BUILDINGS—BA

Tex., Mexia—WARD—BA 9/8—Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, group of ward buildings, $800,000. Plans deposit $50. Geo. L. Dahl, 2101 N. St. Paul St., Dallas, archt. CD 1/19/54.

Colo., Loma—PLANT—BA 9/23—American Gilsonite Co., 134 W. 3 St., South, Salt Lake City, Utah, gilsonite plant. Over $82,000.

Tex., San Marcos—DORMITORY etc.—BA 9/27—Southwest Texas State Teachers College, San Marcos, and Bd. Regents, State Teachers College, Tribune Bldg., Austin, No. 1 girl's dormitory, $450,000; No. 2, girl's apartments, $475,000. Plans deposit $50 each. Harvey P. Smith & Assocs., 117 E. Prado Dr. West, San Antonio, archts. CD 6/22.

BUILDINGS—SLC

▲ **Tex., Beaumont**—HOSPITAL—Baptist Hospital, c/o Bd. Trustees, Beaumont, soon lets contract Baptist Hospital addn. $1,500,000. Stone & Pitts, 1872 Calder St., Beaumont, and Landauer & Shafer, 4801 Lemmon St., Dallas, engrs. CD 3/13/53.

HEAVY CONSTRUCTION—LB & CA

KANSAS—Kansas Turnpike Auth., P. O. Box 681, Topeka,
J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan. CA $648,675. one structure, welded girder, continuous span, Wyandotte Co. Bids Aug. 12. awarded Aug. 15. CD 8/17, under LB.

▲ **KANSAS**—Kansas Turnpike Auth., P. O. Box 681, Topeka,
KTA—**Reno Constr. Co.**, P. O. Box 61, Overland Park, Kan. CA $2,518,378. b. conc. 14.9 mi. Butler Co.; CA $1,238,547. b. conc. 7.5 mi. Butler Co.;
KTA—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan. CA $1,838,138. c. conc. 10.11 mi. Wyandotte Co.;
KTA—**Amis Constr. Co.**, P. O. Box 1871, Oklahoma City, Okla. CA $866,793. c. conc. 4.45 mi. Butler and Sedgwick Counties; CA $945,611 b. conc. 4.89 mi. Butler Co.;
KTA—**Peter Kiewit Sons Co.**, Southeast Station, Wichita, Kan. CA $2,210,714. b. conc. 4.08 mi. Sumner Co.;
KTA—**H. D. Youngman Contr., Inc.**, Baxter Springs, Kan. CA $2,302,517. b. conc. 12.95 mi. Sumner and

(Continued on page 82)

SIKA

STOPS LEAKS FAST . . . AND SIMPLY, TOO

Sika can seal leakage through any concrete structure against pressure. The Sika method is quick, sure and long-lasting.

Here is all you do.

1. Hack and clean surface.
2. Mix quick-setting Sika liquid and portland cement.
3. Use Sika No. 4A mortar for sealing seepage and diverting water to bleeder holes. (For air-placed mortar use Sigunit.)
4. Use Sika No. 2 mortar (sets in 20 seconds) to plug bleeders.
5. After sealing all leaks, apply a protective cement coat over entire surface.

For 30 years Sika compounds and methods have helped solve concrete and masonry problems ranging from the production of high quality concrete to the sealing of joints or cracks subject to severe movement and pressure.

Additional Sika compounds cover the following specific problems: TO SEAL LEAKS AGAINST PRESSURE, TO SEAL JOINTS OR CRACKS, TO REPAIR NON-LEAKING SURFACES, TO REPAIR STRUCTURAL EXTERIORS, TO PLACE GUNITE OR PRESSURE GROUT, TO PRODUCE HIGH QUALITY CONCRETE.

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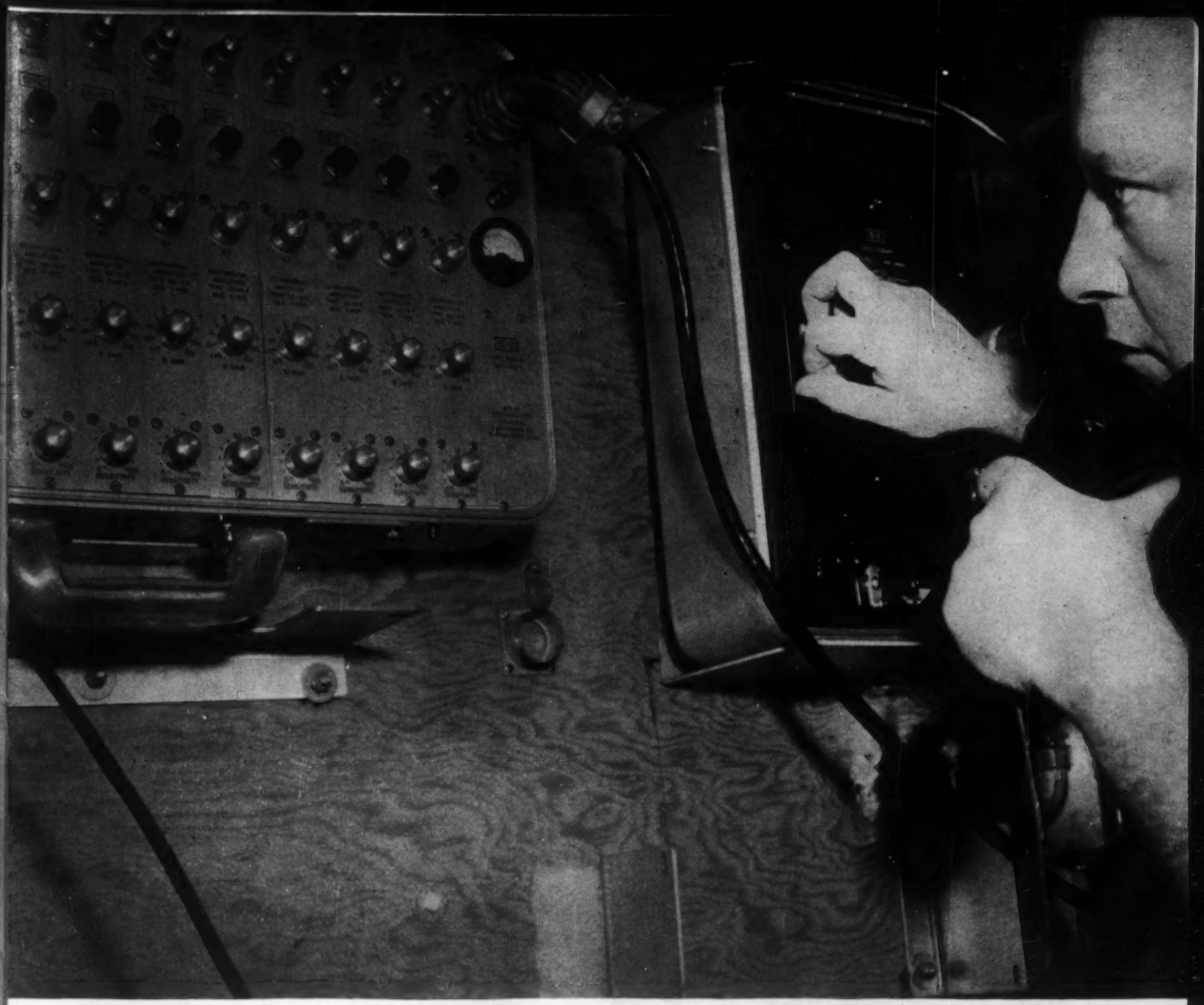

WIRE TAPPING

From this command post, a seismic survey crew member records subsurface conditions by measuring the time of advance of a wave front generated by an explosion of dynamite. Using specialized explosives, equipment, and methods, engineering seismology not only detects new oil reserves, but solves problems for highways, tunnels, buildings, and other construction projects—wherever a knowledge of subsurface conditions is vital.

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XR55-5

(Continued from page 80)

Sedgwick Counties. Grand total $11,920,698. Bids Aug. 12, awarded Aug. 15. CD 8/17, under LB.

Nueces Electric Co-operative, Robstown, Tex., Own Forces, $200,000. rural distr. lines, Robstown, Nueces Co. TEXAS. CD 8/3/50.

▲† **R. B. Potashnick Constr. Co.**, Box 423, Cape Girardeau, Mo., LB $5,758,287, constr. and completion Ferrells Bridge Dam and appurtenances on Cypress Creek, near Jefferson, Marion Co., TEXAS. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Aug. 19. CD 8/5.

▲ TEXAS—State Hy. Comn., Austin,

Tex.—**Austin Road Co.**, P. O. Box 1590, Dallas, Tex. LB $817,459, conc. pavement, stabil. shoulders 4.906 mi. Hy. US 67, Proj. E 10-10 & 11-7 & 31, Cass and Bowie Counties;

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., LB $859,361, flexible base and hot mix b. conc. 4.106 mi. Hy. Loop 13, Proj. U 1075 (2), Bexar Co.;

Tex.—**Harry Campbell**, Rte. 5, Box 68-A, Abilene, Tex., LB $164,642, grading, structures, base, surf. 12.697 mi. Hy. FM 2211, Proj. S 17 (2), Stonewall Co.;

Tex.—**J. R. Fanning**, P. O. Box 1278, Lubbock, Tex., LB $141,233, grading, structures, base, surf. 7.909 mi. Hy. FM 1614, 57 and US 180, Proj. S2061 (1), etc. Fisher Co.;

Tex.—**Fred Hall & Son**, Valley Mills, Tex., LB $267,946, grading, structures, base, surf. 13.955 mi. Hy. FM 1245 and 1633, Proj. S 1953 (1), Limestone Co.;

Tex.—**O. W. Howard**, Madisonville, Tex., Lb $316,521, foundation course, one course surf. tr. 5.474 mi. Hy. ST 7, Proj. F 1092 (9) Robertson and Leon Counties; LB $119,955, grading, structures, base, surf. 5.247 mi. Hy. FM 906. Proj. R 769-2-6, Lamar Co.;

Tex.—**Ernest Loyd**, P. O. Box 1120, Fort Worth, Tex., LB $89,697, grading, structures, base, surf. 3.084 mi. Hy. FM 2277, Proj. S 2012 (1), Hutchinson Co.;

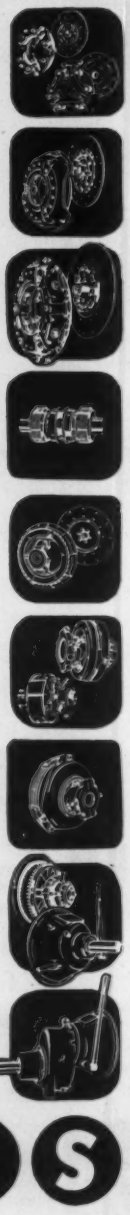
Tex.—**McDonald Constr. Co.**, P. O. Box 9617, Dallas, Tex. LB $80,802, grading, structures, base, surf. 3.232 mi. Hy. FM 1282, Proj. R 1379-1-3, Grayson Co.;

Tex.—**Hugh McMillan**, P. O. Box 1227, El Paso, Tex. LB $99,800, flexible base, b. conc. 2.686 mi. Hy. US 90, Proj. C21-7-13, Terrell Co.;

Tex.—**Holland Page**, P. O. Box 1181, Austin, Tex., LB $895,668, c. conc. 3.241 mi. Hy. SH 288, Proj. F 1037 (2), Brazoria Co.; LB $149,626, grading, structures, base, surf. 3.79 mi. Hy. FM 1994, Proj. S 1867 (2), Fort Bend Co.;

Tex.—**Perry Constr. Co.**, 501 Insurance Bldg., San Antonio, Tex., LB $93,198, grading, structures, base, surf. 6.298 mi. Hy. FM 2156, Proj. R 1991-2-1, Erath Co.; LB $117,793, foundation course, two course surf. tr. 8.122 mi. Hy. SH 304, Proj. S 1508 (5), Bastrop and Caldwell Counties;

ROCKFORD



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CLUTCHES

Tex.—**M. E. Ruby**, San Marcos, Tex., LB $750,835, grading, structures, 11.816 mi. Hy. US 81, Proj. FI 614 (12), McLennan Co.;

Tex.—**Henry Stafford**, P. O. Box 1047, Lubbock, Tex., LB $319,196, flexible base, and b. conc. 18.347 mi. Hy. SH 17, Proj. S 320 (2), Reeves Co.;

Tex.—**Trotti & Thomson, Inc.**, P. O. Box 70, Beaumont, Tex., LB $204,921, flexible base and b. conc. 0.864 mi. Hy. US 96, Proj. F 354 (7), Hardin Co.;

Tex.—**Dean Word Co.**, P. O. Box 330, New Braunfels, Tex. LB $107,617, flexible base shoulders, widen structure and b. conc. 6.121 mi. Hy. US 281, Proj. C 253-4-25, Bexar Co. Bids Aug. 16. CD 7/22, 8/1.

▲ TEXAS—State Hy. Comn., Austin,

Tex.—**Cage Bros.**, 6959 San Pedro St., San Antonio, Tex., LB $144,543, grading, structures, base, surf. 11.257 mi. Hy. FM 1720, Proj. S 1979 (2), Haskell Co.;

Tex.—**Callan Constr. Co.**, Box 3146, Westview Station, Waco, Tex., LB $103,486, grading, structures, base, surf. 1.457 mi. Hy. FM 147, Proj. S 324 (4) Falls Co.;

Tex.—**J. R. Fanning**, P. O. Box 1278, Lubbock, Tex., LB $73,543, flexible base, b. conc. 1.895 mi. Hy. SH 36, Proj. C 181-1-9, Taylor Co.;

Tex.—**J. B. Griffin**, 104 Richmond St., Waxahachie, Tex. LB $101,280, grading, structures, base, surf. 5.081 mi. Hy. FM 1434, Proj. S 1614 (1), Johnson Co.;

Tex.—**Gulf Bitulithic Co.**, P. O. Box 2572, Houston, Tex. LB $80,952, b. conc. 20.906 mi. Hy. SH 149 and 155, Proj. C 393-2-9, etc., Rusk, Panola and Upshur Counties;

Tex.—**Fred Hall & Son**, Valley Mills, Tex., LB $409,585, flexible base, two course surf. tr. 8.702 mi. Hy. US 183, Proj. F 233 (3), Burnet Co.;

Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex. LB $143,012, flexible base shoulders, widen structures and b. conc. 7.758 mi. Hy. US 181, Proj. F 131 (4), Bexar Co;

Tex.—**McDonald Constr. Co.**, P. O. Box 9617, Dallas, Tex., LB $164,000, grading, structures, base, surf. 6.001 mi. Hy. FM 902, Proj. R 5101-5, Grayson Co.;

Tex.—**R. W. McKinney**, P. O. Box 190, Nacogdoches, Tex. LB $73,509, grading, structures, base, surf. 2.854 mi. Hy. FM 1629, Proj. R 1980-1-1, Fannin Co.;

Tex.—**Lee Moor Contg. Co.**, 205 Bassett Tower, El Paso, Tex., LB $157,368, grading, structures, base, surf. 8-154 mi. Hy. FM 1610, 2085 and 1298, Proj. S 2040 (1), Borden and Scurry Counties;

Tex.—**Harry Newton, Inc.**, Graham Land Office Bldg., Graham, Tex., LB $851,675, grading, bridges, flexible base and b. conc. 3.965 mi. Hy. US 59, Proj. F 543 (15), Jackson Co.;

Tex.—**Dan Pennington**, Grapeland, Tex., LB $105,879, grading, structures, base, surf. 8.821 mi. Hy. FM 2136, Proj. R 2058-1-1, Bosque Co.;

Tex.—**M. E. Ruby**, San Marcos, Tex., LB $175,490, grading, structures, base and surf. 9.142 mi. Hy. FM 1105, Proj. R 2038-2-1, Williamson Co.;

Tex.—**Schwope Eng. Constr. Co.**, P. O. Box 15066, Houston, Tex., LB $433,815, flexible base, two course surf. tr. 11.295 mi. Hy. SH 238, Proj. S 2065 (1), Calhoun Co.;

Tex.—**Vowell Constr. Co.**, P. O. Box 253, El Paso, Tex., LB $322,655, flexible base, b. conc. 2.139 mi. Hy. US 80, Proj. C 1-4-31, etc., El Paso Co.;

Tex.—**Dean Word Co.**, P. O. Box 330, New Braunfels, Tex. LB $1,367,884, flexible base, hot mix b. conc. 4.059 mi. Hy. US 81, Proj. UI 200 (20), Travis Co.;

Tex.—**Worrell & Watkins**, Rte. 8, Box 166-A, Dallas, Tex. LB $98,382, foundation course, two course surf. tr. 13.044 mi. Hy. US 281, Proj. C 254-2-15, Live Oak Co. Bids Aug. 17. CD 7/22, 8/1.

▲† **McCann Constr. Co.**, 1803 E. Lancaster St., Fort Worth, Tex., LB $1,242,226, 100-unit housing, Gary Air Force Base, SAN MARCOS, TEX. Gary Air Force Base, c/o Floyd A. Henderson, Contg. Officer, San Marcos, Tex. Bids Aug. 17.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex., Day Labor, $75,000. street, area lighting; $75,000, natural gas lines for 500-home project. VICTORIA, TEX. CD 8/1.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex. Day Labor, $50,000. bldg. site area earthwork, grading, open drainage, VICTORIA, TEX.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex. Day Labor, $77,500. constr. and conc. paving new streets, concrete curbs, gutters for 500-home project, VICTORIA, TEX.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex. Day Labor, $47,500. water lines, facilities, for 500-home project, VICTORIA, TEX.

E. J. Dysart, Dave Lack & Assocs., Victoria, Tex. Day Labor, $75,000. storm sewers; $77,500 sanitary sewer collection lines for 500-home project, VICTORIA, TEX. CD 8/1.

† **Leigland Constr. Co.**, South of Great Falls, Mont. LB $240,703, est. $206,746. crash and structural fire station at Great Falls Air Force Base, ENG-45-164-56-2, GREAT FALLS, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Aug. 16. CD 7/14.

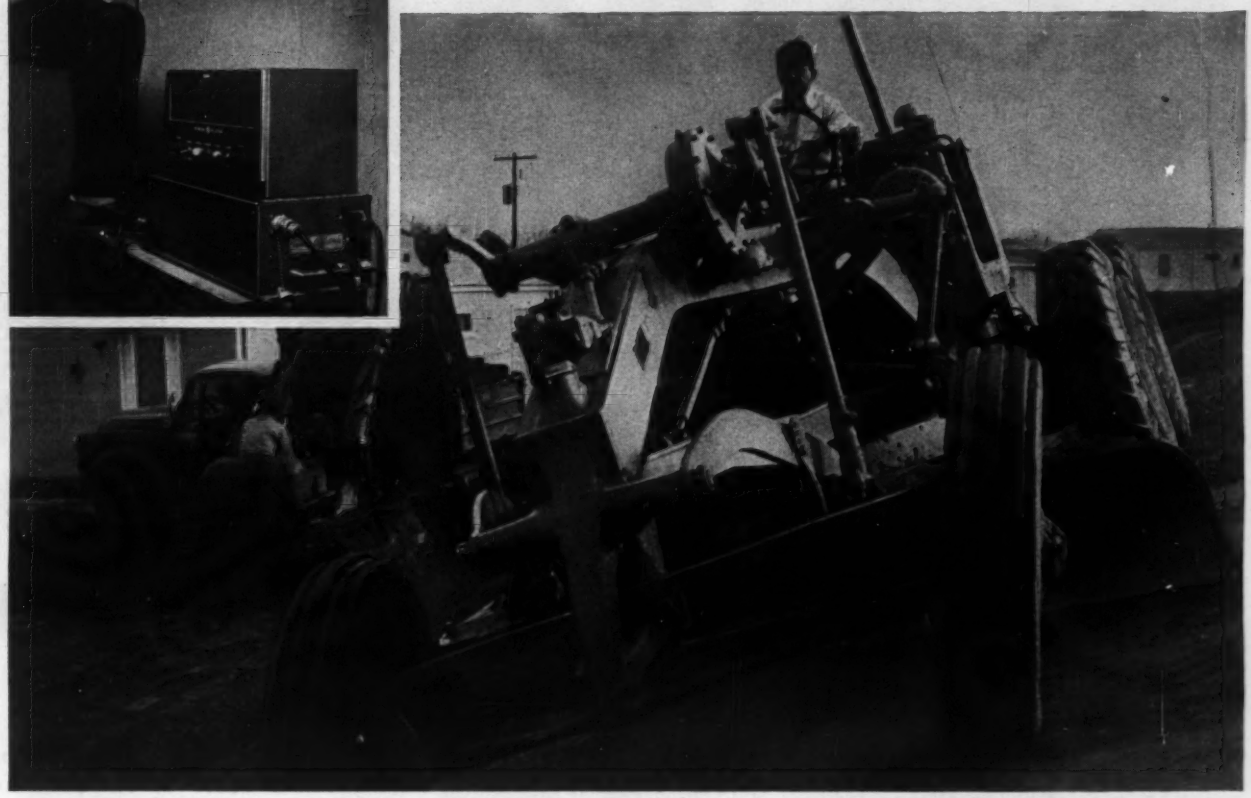
† **S. Morgan Smith Co.**, York, Pa., LB $434,850, two hydraulic turbines for Glendo Power Plant, Missouri River Basin Proj., Oregon Trail Div., Spec. DS-4450, WYOMING, Bureau Reclamation. Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Aug. 9. CD 7/15.

† **Western Paving Co.**, 5105 Washington St., Denver, Colo., LB $235,692. Sch. 1, open storage facilities, Rocky Mountain Arsenal, Inv. 25-066-56-14, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 12. CD 7/21, under Public Buildings.

Warner Brothers Constr. Co., 5505 Vance St., Arrada, Colo., CA, $130,322, est. $250,000. sanitary sewage collecting and disposal sys., WHEAT RIDGE, COLO. Westridge Sanitation Dist., W. 38 Ave., Wheat Ridge, Colo. Bids Aug. 10, awarded Aug. 16.

(Continued on page 85)

CONSTRUCTION BOSS CUTS TIME AND TRAVEL AT LEAST 50% WITH 2-WAY RADIO



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"I drive less than half the miles, yet have far greater control over all my crews, all over the *county*, since installing our General Electric 2-way radio system," reports Bill Blake, Vice President of Hodgson-Blake, Inc. of Montgomery, Alabama. "With radio in my car, I am never out of reach either by my crew foremen, or the office."

Here is another big advantage of radio—when construction equipment breaks down, you can order repair parts instantly over the air! Men and equipment go back to work quicker, saving you money by reducing idle waiting time to a minimum. G-E 2-way radio performs dependably through emergencies—is engineered to withstand the severest tests of weather, dust or shock.

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This equipment protects the operators from excessive heat by maintaining 78 to 80°F when temperatures outside the cab become extremely high. It also removes dust, dirt and fumes which, combined with intense heat, impair efficiency, decrease alertness and make frequent relief periods necessary.

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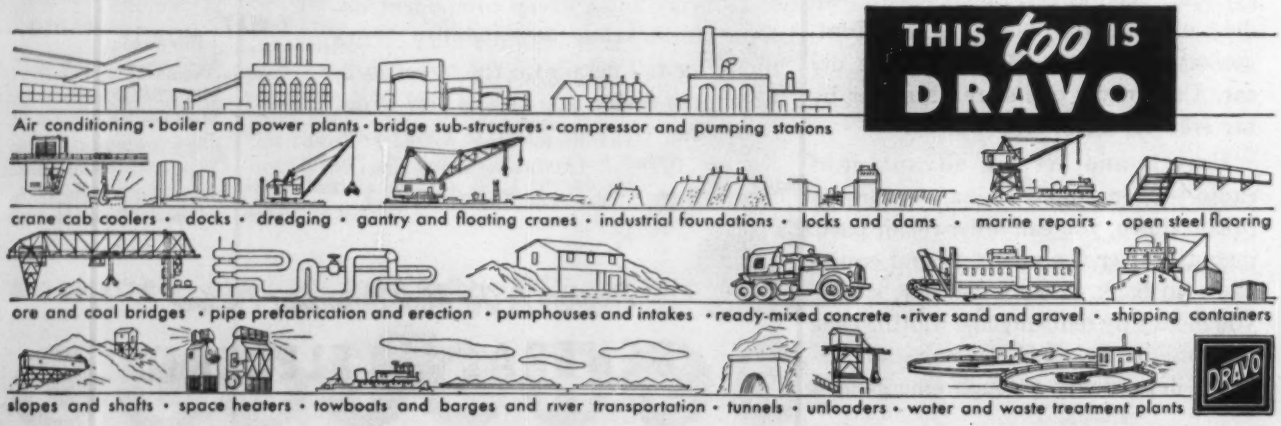
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slopes and shafts • space heaters • towboats and barges and river transportation • tunnels • unloaders • water and waste treatment plants
DRAVO

(Continued from page 82)

BUILDINGS—LB & CA

▲ **A. Hedenberg & Co.**, 4621 E. Superior St., Duluth, Minn., LB **$1,190,000** (6 bidders) general contract, West Junior High SCHOOL and elementary SCHOOL addns., remodeling, Central Ave. at W. 6 St., DULUTH, MINN. Bd. Educ., Duluth, Minn. Bids Aug. 11. CD 8/2.

Henry Carlson, 416 S. 2 St., Sioux Falls, S. D. CA **$537,304.** general contract HIGH SCHOOL, FULDA, MINN. Bd. Educ., J. P. Tuseth, clk., Fulda, Minn. CD 8/9, under LB.

▲ **Priester Constr. Co.**, 1117 Davenport Bank Bldg., Davenport, Iowa, CA Total est. **$20,000,000** earth and rock excav. and building foundations for 218,000 sq. ft. ROLLING MILL at aluminum plant, Riverdale near DAVENPORT, IOWA. Aluminum Co. of America, 230 Park Ave., New York, N. Y.;
Bethlehem Steel Co., Oliver Bldg., Pittsburgh, Pa., CA, fabricating structural steel for one building, (Davenport, Iowa).

Leo H. Hummert, 8125 Maryland Ave., Clayton 2, Mo. Owner Builds. **$400,000.** ranch-type, brick concrete, RESIDENCES, Langston and Francis Place west of Breenwood Blvd., CLAYTON (ST. LOUIS 24 P.O.), MO. Edward B. Kelley, 1111A Brentwood Blvd., Clayton 24, Mo., archt.

▲ **Hillton Home Builders, Inc.**, Chambers Rd. north of Coppinger Rd., Ferguson, 21, Mo. Owner Builds, **$1,000,000.** 130 RESIDENCES 35-acre tract in Hutton Pl. subdivision, on Chambers Rd., north of Coppinger Rd. just off Florissant Rd., St. Louis County, FERGUSON (ST. LOUIS 21, P. O.) MO.

Ben Lewin, Hys. 9 and 45, Kansas City, Mo. Owner Builds. **$400,000.** SHOPPING CENTER, KANSAS CITY, Mo. Terrell & McCall, 1016 Baltimore St., Kansas City, Mo., archts.

Sievers Constr. Co., 215 E. Main St., Sedalia, Mo. LB **$139,386.** 1 story, 81x153 ft. egg grading, refrigeration PLANT, SEDALIA, MO. Missouri Farmers Assn., 226 W. Pacific St., Sedalia, Mo. Bids Aug. 4: CD 7/27.

Jamestown College, Dr. E. H. Rian, pres., Jamestown, N. D., rejected bids Aug. 3, general contract girls' DORMITORY, JAMESTOWN, N. D. LB **$506,000.** CD 8/9, under LB.

Meisner & Anderson, Bismarck, N. D., CA **$525,995,** SENIOR HIGH SCHOOL, MANDAN, N. D. Bd. Educ., F. Conrath, clk., Mandan, N. D. Bids July 14. CD 7/28 under LB.

▲ **W. R. Brimshaw Co.**, Philtower Bldg., Tulsa, Okla., LB **$1,293,111,** est. $1,250,000. 100x155 ft. MEDICAL CENTER, 11th and Utica Sts., TULSA, OKLA. Hillcrest Medical Center, 11th and Utica Sts., Tulsa, Okla. CD 7/16/53.

Carla Development Co., 4143 Bellfontane St., Houston, Tex. Owner Builds, **$353,000,** 16 DWELLINGS; **$379,-000,** 20 DWELLINGS, HOUSTON, TEX. CD 8/1.

A. Baron Clarence, Builders, 3311 Greenoch St., Houston, Tex., CA, **$500,000.** 60-unit APARTMENT, HOUSTON, TEX. Harry Brockstein (Trustee), 2211 Chenevert St., Houston, Tex. CD 8/8.

W. A. Franklin, Contractor, 2140 Danville St., Houston, Tex. Owner Builds. **$345,500.** Proj. 1, APARTMENT UNITS, HOUSTON, TEX.

Hub Lumber Co., 5519 Lawndale St., Houston, Tex. Owner Builds, **$376,175;** 32 DWELLINGS; **$355,500** 25 DWELLINGS, HOUSTON, TEX. CD 8/1.

Nash Constr. Co., c/o Don West, 3936 Main St., Houston, Tex., Owner Builds. **$450,000.** 20 masonry DWELLINGS, HOUSTON, TEX.

Suburban Homes Development Co., 9102 Jensen St., Houston, Tex., CA, **$353,000.** 25 DWELLINGS; CA **$371,425,** 35 DWELLINGS, HOUSTON, TEX. Laurence, Eugene D. and Thomas M. O'Donnell, 9102 Jensen St., Houston, Tex. CD 8/28.

I. T. Krause, McAllen, Tex., CA, **$350,000.** 60 unit MOTEL and appurtenances, McALLEN, TEX .Fairway Land & Hotel Corp., c/o Bill Wilson, McAllen, Tex. CD 7/8.

▲ **J. J. Fritch Constr. Co.**, 6834 Harry Heinz Blvd., Dallas, Tex., LB, **$1,324,711.** 100,000 sq. ft. 340-bed East Texas Tuberculosis HOSPITAL, TYLER, TEX. Bd. for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., Austin, Tex. Bids Aug. 17. CD 7/26.

† **Mountain States Constr. Co.**, Denham Bldg., Denver, Colo., CA, **$694,427,** est. $900,000, 19,000 sq. ft. industrial type bldg., at ATOMIC POWER PLANT EXPANSION, DENVER, COLO. U. S. Atomic Energy Comn., P. O. Box 2611, Rocky Flats Plant, Denver, Colo. Bids July 26, awarded Aug. 10. CD 8/9, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA 9/16—Los Angeles Co. Hall of Records, sewers in Tilbury St., C.I.1735, Artesia, $132,700.

▲ **Calif., Los Angeles**—BA 9/16—Los Angeles County Flood Control Dist., 2250 Alcazar St., channel excavation and constr. covered conduits, Drainage District Imprvt. No. 9, Whittier, $500,000; Proj. 187, Allen Ave. storm drain, Pasadena, $500,000. H. E. Hedger, c/o owner, engr. CD 11/7/52.

Calif., Salinas—BA 9/19—Monterey County Flood Control & Water Conservation Dist., at office County Clerk, Court House, zone type rolled earth embankment, approx. 1500 ft. long at crest and 260 ft. maximum height above bedrock, 9 mi. southwest of Bradley on Nacimiento River. Plans deposit $25.

▲† **California**—BA 9/20—U. S. Eng. 751 S. Figueroa St., Los Angeles, Los Angeles River Imprvs. River

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mile 4.97 to 4.63 Long Beach, Los Angeles Co. CIVENG-04-353-56-8. $1,000,000. CD 12/17/52.

Calif., San Diego—BA 9/21—City, Civic Center, dredging in San Diego Bay, vicinity of 10th Ave. Marine Terminal. $500,000. CD 4/25, under Unclassified.

† **Utah**—BA 10/10—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. pumping plants for Weber Basin Proj., Davis Co. CD 8/4/52.

BUILDINGS—BA

▲ **Calif., San Francisco**—HOTEL—BA 9/15—City and County of San Francisco, Dpt. P. Utilities, City Hall, construct and finance 200-room hotel, $2,000,000.

HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comn., Olympia, Wash.—**R. A. Heintz Constr. Co.**, 211 N. E. Columbia Blvd., Portland, Ore., LB, **$923,063**, (14 bidders) surf., b. conc., and c. conc. paving, rein.-con. rigid frame slab bridge 3.37 mi. Primary State Hy. 8, Fisher Rd. to Camas, F.A.P. F-014-1 (3), Clark Co.; Wash.—**Pacific Sand & Gravel Co.**, Centralia, Wash., LB, **$104,662** (2 bidders) draining, grading, surf., 2 rein.-con. slab bridges 1.174 mi. Independence Rd., F.A.S.S. 0244 (1), Lewis Co.; Wash., **Columbia Asphalt Paving Co.**, Yakima, Wash., LB **$134,257** (2 bidders), surf. b. conc. paving 5.13 mi. State Hys. 2 and 2 E, Cle Elum River to Cle Elum, et al, Kittitas Co. Bids Aug. 16 CD 8/1.

WASHINGTON—State Hy Comn., Olympia, **H. Hagman**, Cashmere, Wash., LB, **$93,992**. (5 bidders) rein.-con. rigid frame, slab Pines Rd. undercrossing with drainage, grading, surf. b. conc. paving Primary State Hy. 2, F.A.P. IN-002-6 (16), Spokane Co. Bids Aug. 16. CD 8/1.

WASHINGTON—State Hy. Comn., Olympia, received no bids Aug. 16, draining, grading, light bit. surf. 0.62 mi. Secondary State Hy. 3-E, Harvey Shaw Rd., north, F.A.S.S-297, Walla Walla Co. CD 8/1.

† **Werner & Charneski & George W. Lewis**, Eugene Ore., LB, **$281,941**, est. $300,000. earthwork, concrete lateral lining, structures for north part of Block 89 laterals, wasteways and drains, West Canal Laterals, Columbia Basin Proj., Spec. DC 4462, WASHINGTON Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 9. CD 6/28.

Thorn & Marble and Columbia Builders, Inc., 4225 23 Ave. W., Seattle, Wash., LB, **$101,246** (5 bidders) sewerage sys. for Harrison Hill District, SUNNYSIDE, WASH. City, City Hall, Sunnyside, Wash. Bids Aug. 15. CD 7/1.

W. A. McConnachie, Yakima, Wash., LB., **$141,978**, (8 bidders) water sys., for Harrison Hill District, SUNNYSIDE, WASH. City, City Hall, Sunnyside, Wash. Bids Aug. 15. CD 7/18.

† **R. A. Farish Co.**, 246 E. Miner St., Stockton, Calif., LB, **$600,819**, est. $592,265 earthwork, structures, surf. for relocation of Calif. State Hy. 102, from 15 mi. east of Rutherford to Rte. 6, Monticello Reservoir, Solano Proj. Spec. DC 4460, CALIFORNIA Bureau Reclamation, Dpt. Interior, Winters, Calif. Bids Aug. 11. CD 6/28.

R. V. Lloyd & Co., Box 391, Coachella, Calif., LB, **$677,349**. Oxnard-Port Hueneme Pipe Line, Unit 4, of Lower River Division Oxnard-Port Hueneme, Ventura Co.; CALIFORNIA. United Water Conservation Dist., 806 Railroad Ave., Santa Paula, Calif. Bids Aug. 10. CD 7/26.

Southwest Welding Mfg. Co., 3201 Mission Rd., Alhambra, Calif., LB, **$89,800** est. $100,000 3 m.g. welded steel water tank, ESCONDIDO, CALIF. Rincon Del Diablo Municipal Water Dist., 626 W. 5 St., Escondido, Calif. Bids Aug. 5. CD 7/20.

Sheets Constr. Co., 201 E. Victoria St., Gardena, Calif., CA, **$79,873**. imprv. 152 St. between Mansel Ave. and Inglewood Ave., Lawndale C.I. 1607, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Aug. 5. Wm. J. Fox, engr. CD 9/19/45.

Danilo Prodanivich, 1641 136 Ave., San Leandro, Calif., LB, **$304,150**. (3 bidders) installing 2- to 16-in. diam. c.i. asbestos cement, welded steel water mains, between Alameda and Contra Costa Counties, OAKLAND, CALIF. East Bay Municipal Utility Dist., 512 16 St., Oakland, Calif.

Healy-Tibbits Constr. Co., 411 Brannan St., San Francisco, Calif., LB, **$253,799**. rein.-con. box culvert on Lakeshore Ave. from Lake Park Ave. to Lake Merrit, OAKLAND, CALIF. City, City Hall, Oakland, Calif. CD 2/5/45.

McGuire & Hester, 796 66 Ave., Oakland, Calif., LB, $137,028 (4 bidders) laying pipe conduit in Cypress St. from W. Grand to 18 Sts.; LB **$151,793** (2 bidders) corrugated metal pipe culvert conduit and facilities, 31, 32, Peralta Sts. and San Pablo Ave., OAKLAND, CALIF. City, City Hall, Oakland, Calif.

Einer Bros. Inc., Box 202, Escondido, Calif., LB **$104,150**, est. $100,000, water mains and pumping stations, POWAY, CALIF. Poway Municipal Water Dist., Poway, Calif. Bids Aug. 9.

V. R. Dennis Constr. Co., Box 3158, Hillcrest Station, San Diego, Calif., LB **$76,337** imprv. 37 St. and other streets, SAN DIEGO, CALIF. City, Civic Center, San Diego, Calif. Bids Aug. 12. CD 8/11.

▲ **F. E. Young Constr. Co.**, 2141 Main St., San Diego, Calif., LB, **$1,540,000**. Sycamore Canyon facilities, Camp Elliott, SAN DIEGO, CALIF. General Dynamics Corp., Convair Div., 1995 Bay Front Ave., San Diego, Calif. Bids Aug. 15. CD 7/25.

Chicago Bridge & Iron Co., 200 Bush St., San Francisco, Calif., LB, **$55,152** (2 bidders) laying 6- to 8-in. iron water mains in McLaren Park, Spec. 718, SAN FRANCISCO, CALIF. P. Utilities Comn., City Hall, San Francisco, Calif. CD 2/5/45.

BUILDINGS—LB & CA

Ductile Iron & Alloy Co., Wallace, Idaho, Day Labor $100,000. FOUNDRY, WALLACE, IDAHO.

Pope & Talbot, Walker Bldg., Seattle 1, Wash. Day Labor, **$121,000**. green veneer PLANT and fire station, PORT GAMBLE, WASH. CD 3/2.

▲ **Frematic Homes**, 109 S. Gilbert St., Anaheim, Calif., CA, **$1,889,500**. 155 frame, stucco DWELLINGS, La Palma and Brookhurst Sts., ANAHEIM, CALIF. La Palma Cattle Co., 109 S. Gilbert St., Anaheim, Calif.

Eugene Spiegel, 5656 W. 3 St., Los Angeles, Calif., CA, **$408,000**. 34 frame, stucco DWELLINGS, Tract 2440, ANAHEIM, CALIF. S. & N. Constr. Co., 5630 W. 3 St., Los Angeles, Calif.

▲ **Peter Kiewit Sons' Co.**, 345 Kieways, Arcadia, Calif., CA, **$1,507,528**, est. $1,000,000 HIGH SCHOOL, Cerritos Ave. and First St., AZUSA, CALIF. Citrus Union High School Dist., 18824 E. Foothill Blvd., Azusa, Calif. Bids Aug. 1, awarded Aug. 16. CD 8/4, under LB.

Continental Bldgs. Co., 20 W. Burbank St., Burbank, Calif., CA, **$180,000**. 44,280 sq. ft. Brick WAREHOUSE, LOS ANGELES, CALIF. J. Bienenfeld, 9624 Bellanea St., Los Angeles, Calif.

Smith-Campbell, 6510 Cherry Ave., Long Beach, Calif., LB, **$482,929**. Primary SCHOOL, PUENTE, CALIF. Hudson School Dist., 15839 E. Rowland St., Puente, Calif. Bids Aug. 5. CD 7/28.

▲ **Bollenbacher & Kelton**, Rt. 1, Box 475, San Diego, Calif. Owner Builds, **$1,099,080**, 100 frame, stucco DWELLINGS, Allied Gardens Tract No. 5, SAN DIEGO, CALIF.

Marin Builders, Inc., 2204 McDonald Ave., Richmond, Calif. Owner Builds. **$704,000**. 64 HOME Sub-division, Marinwood Subdivision near SAN RAFAEL, CALIF.

Pacific Coast Builders, 1 S. Park St., San Francisco, Calif., CA **$550,500** (6 bidders) SCHOOL, Pedro Valley, SHARP PARK, CALIF. Laguna Salada Elementary School Dist., P.O. Box 5, Sharp Park, Calif. Awarded Aug. 15. CD 8/17, under LB.

Len Constr. Co., 8302 W. 3 St., Los Angeles, Calif., CA, **$727,100**. 73 frame, stucco DWELLINGS, Reese Rd., TORRANCE, CALIF. Fieldbrook, Inc., 8302 W. 3 St., Los Angeles, Calif.

CANADA

BUILDINGS—BA

Ont., Barriefield—BARRACKS—BA 9/13—Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, 250-man barracks at Barriefield Army Camp. $400,000. Plans deposit $100.

BUILDINGS—SLC

Ont., Blind River—MINE OFFICE, etc.—Algom Uranium Mines, Ltd., Blind River, soon lets contract 1 and 2 story concrete block, steel, brick mine office, hoist house, control room, warehouse, boiler room. Over $150,000. R. M. Way & Co., 696 Yonge St., Toronto, engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **McNamara Constr. Co. Ltd.**, 42 Industrial St., Toronto, Ont., CA **$6,000,000**. 45-mile railway, joining iron ore deposit at Lake Wabush with railway operated by Iron Ore Co. of Canada, between Knob Lake and Seven Islands, Que.; CA **$1,500,000**. concentrating plant at iron ore development, Lake Wabush; CA **$250,000**, airstrip at iron ore development, Lake Wabush; CA **$2,500,000**, townsite at iron ore development, Lake Wabush, LABRADOR. Grand total $10,250,000. Canadian Javelin Ltd., Dominion Square Bldg., Montreal, Que. P. E. Pesonen, c/o owner, consult. engr. Awarded Aug. 15.

▲ **Foundation Co. of Ontario Ltd.**, 1220 Bay St., Toronto, Ont., LB **$3,193,735** (only bidder) 1,000 g.p.d. capacity filtration plant extension, with addnl. filter, settling tanks, mixing tanks, pumping equip., superstructure, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St., E., Toronto, Ont. Bids Aug. 15. CD 7/27.

McNamara Constr. Co. Ltd., 42 Industrial St., Toronto, Ont., LB **$76,650**. steel sheet pile retaining wall on north shore of Algonquin Island in Toronto Bay, TORONTO, ONT. City, City Hall, Toronto, Ont.

BUILDINGS—LB & CA

▲ **Canadian Kellogg Ltd.**, Edmonton, Alta., CA, **$2,500,000**, REFINERY, GRANDE PRAIRIE, ALTA. North Star Oil Ltd., Edmonton, Alta. Awarded Aug. 11.

▲ **British Columbia Bridge & Dredging Co. Ltd.**, 544 Howe St., Vancouver, B. C., CA, **$4,000,000**. first phase construction of PLANT expansion, first phase of kraft pulp MILL and bleach PLANT at Duncan Bay on Vancouver Island, VANCOUVER, B. C. Elk Falls Co. Ltd., Duncan Bay, B. C. Bids July 25. CD 6/30.

▲ **Anglin-Norcross (Quebec) Ltd.**, 892 Sherbrooke St., W., Montreal, Que., CA **$2,363,883**, 200-bed irregular shape with three wings and chapel wing, rein.-con. frame to 3rd floor, steel frame above 3rd floor, 4- to 9-stories, HOSPITAL, ST. JOHN, N. B. St. Joseph's Hospital, 117 Cobourg St., St. John, N. B. Bids July 27, awarded Aug. 12. CD 7/1.

▲ **M. Sullivan & Son, Ltd.**, 234 Eglin St., Arnprior, Ont., CA, **$1,300,000** (3 bidders) 8 story, steel, stone OFFICE BLDG., CORNWALL, ONT. St. Lawrence Seaway Auth., 1225 No. 2 Temporary Bldg., Ottawa, Ont. Bids July 26, awarded Aug. 16. CD 7/5.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont. CA, $558,737, OFFICERS' MESS and 3 OFFICERS' QUARTERS, outside services, Army Camp, PETAWAWA, ONT. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids July 19. CD 6/30.

Anderson-Smythe Ltd., 154 Merton St., Toronto, Ont., CA **$681,900**. North Toronto COLLEGIATE addn., TORONTO, ONT. Toronto Bd. Educ., 155 College St., Toronto, Ont. Bids June 23, awarded Aug. 15. CD 7/1, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Monrovia**—City, City Hall, **$1,640,310** bond election Sept. 15, 5 reservoirs, 12- to 24-in. transmission mains, 3 pumping plants and 8 in. distr. mains. James H. Montgomery, 15 N. Oakland Ave., Pasadena, Zone 1, consult. engr. CD 3/5/52.

▲ **Okla., Elk City**—City, defeated **$1,230,000** bonds Aug. 9, WW extens. R. D. Alexander, Globe Life Bldg., Oklahoma City, consult. engr. CD 7/20.

▲ **Va., Portsmouth**—City, City Hall, **$2,500,000** bond election Nov. 8, water supply.

▲ **Wis., Racine**—City, Bd. Water Comrs., City Hall, 5 year WW. imprv. program, incl. elevated water tanks, 20 mi. feeder main, distr. mains, filtration plant addn. **$4,015,000**. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

SEWERS, WASTE DISPOSAL

▲† **Calif., Vallejo**—Dist. P. Wks. Office, Twelfth Naval Dist., San Bruno, sewage disposal plant, Mare Island Naval Shipyard, **$6,000,000**.

▲ **Ill., Chicago**—City, City Hall, storm sewer from Stony Island, 74 St. to B. & O. R.R., also Clyde and 77 Sts., and Clyde and 79 Sts. $1,130,000. CD 1/2/53.

▲ **Mo., St. Joseph**—City, City Hall, $2,500,000 bond election Nov. 8, sewers. CD 8/11.

▲ **O., Euclid**—City, City Hall, 585 E. 222 St., Zone 23, sewage disposal plans will be submitted to State Health Dpt. within three weeks for their approval. **$3,800,000**. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs.

▲ **O., Wickliffe**—City, City Hall, 28730 Ridge Rd., **$1,600,000** bond election Nov. 8, installing sewers, Frank A. Thomas & Assoc., 28730 Ridge Rd., consult. engrs.

BRIDGES

▲ **O., Coshocton**—Comrs. Coshocton Co., Court House, **$1,600,000** bond election Nov. 8, bridges and roads, incl. bridge at Conesville over Muskingum River. CD 11/12/43.

▲ **Tex., Houston**—Comrs. Court, Harris Co., Court House, bond election September 17, steel, concrete bridge across Ship Channel and approach roads. **$10,000,000**. Frank Baldwin, Dir. P. Wks. engr. CD 7/21.

EARTHWORK, WATERWAYS

▲† **Alabama-Georgia**—U. S. Eng., Grant St., Mobile, Ala., Fort Gaines Navigation and Power Dam in Chattahoochee River, incl. 9 ft. navigation channel to Columbus power plant, concrete grated spillway **$86,000,000** ($1,000,000 authorized 1955).

▲† **Indiana**—U. S. Eng., P. O. Box 59, 830 W. Broadway Louisville 1, Ky., Section B-2, 2 mi. earth levee with closures, drainage outlets and appurtenances Wabash River, Vincennes, **$500,000-$1,000,000** ($584,000 appropriated), Bids in October; 5 pumping plants, Wabash River, Vincennes, **$500,000-$1,000,000**, Bids in March 1956.

▲† **Kentucky and Indiana**—U. S. Eng., 830 W. Broadway, Louisville, Ky., Markland Locks and Dam, Ohio River, two locks incl. guard and guide walls, lock gates, valves, operating machinery, appurtenances. Total cost **$10,000,000**. ($1,250,000 appropriated). CD 6/26/52.

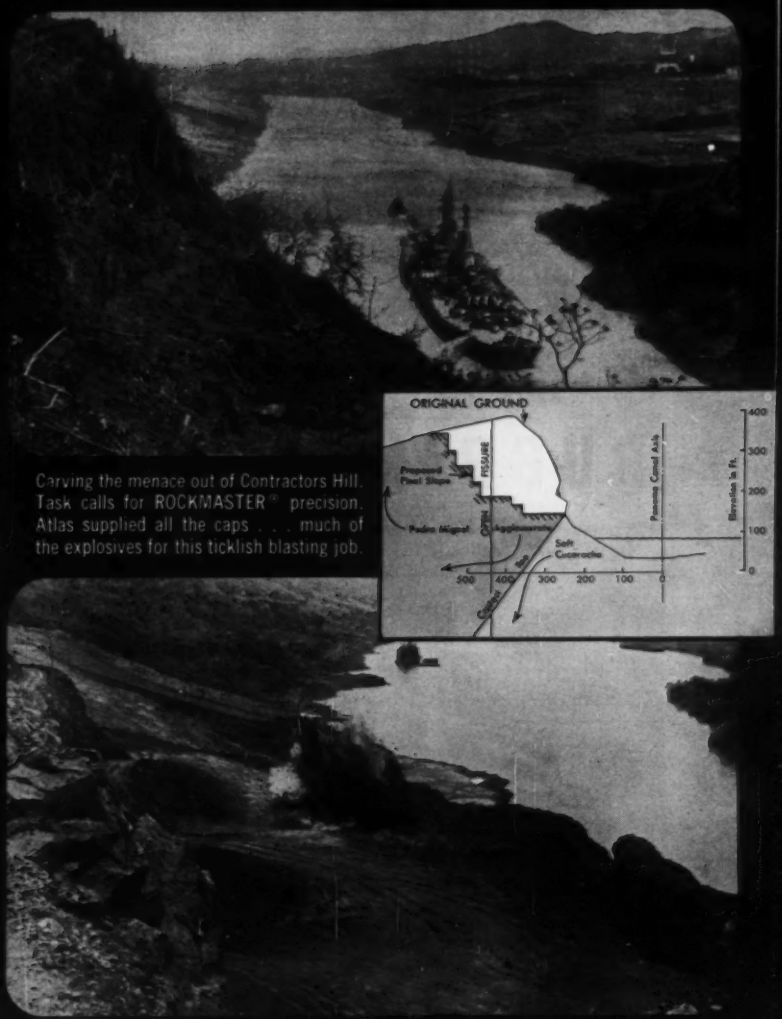
▲† **Kentucky**—U. S. Eng., 303 U. S. Court House, 7th Ave. and Broadway, Nashville, Tenn., Unit 2, embankment, drainage facilities, incl. 6 concrete culverts, 2 pumping plant outlet structures with intercepting ditches and pipe lines, Barbourville, Cumberland River, **$500,000-$1,000,000**, Bids in September; 4 brick pumping plants, concrete substructure complete with sub-stations, pumping equip., Cumberland River, **$20,000-$500,000**, Bids in February 1956.

† **Kentucky**—U. S. Eng., 303 U. S. Court House, 7th Ave. and Broadway, Nashville, Tenn., embankment and drainage facilities, Wallsend Section, Cumberland River, Pineville, 3,500 ft. earth levee, with ramp crossings; related drainage facilities, sewer modifications and pumping plant outlet, Bids in September; pumping plants, brick superstructure 18x22 ft. on existing concrete substructure for 54,000 gpm pumping station, incl. supply, installation of sub-station, pumping equip. and appurtenances; 3 gpm brick superstructure and concrete substructure pumping station complete with sub-station, pumping equip., outlet works and appurtenances; 10,800 gpm pumping station complete except for outlet works, Cumberland River, Bids in February 1956. Total **$816,000** appropriation. CD 10/30/52.

† **Kentucky**—U. S. Eng., P. O. Box 59, 830 W. Broadway, Louisville, Zone 1, Rough River Reservoir, concrete outlet in open cut about 500 ft. long, control tower with access bridge at upstream end, stilling basin at

(Continued on page 88)

Engineered Blasting keeps 'Contractors Hill' from toppling into Panama Canal



Carving the menace out of Contractors Hill. Task calls for ROCKMASTER® precision. Atlas supplied all the caps . . . much of the explosives for this ticklish blasting job.

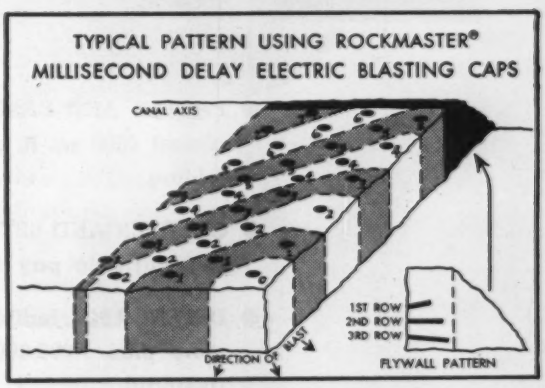
Since 1938, a menacing fissure has been slowly widening in Contractors Hill, 330 feet above the Panama Canal. Last year, Tecon Corp., Dallas, Texas, undertook the challenging job of carving 4,500,000 tons of treacherous, highly fractured rock from the face. The problem was to blast . . . but without toppling the mountain, and with little except dust falling into the Canal itself!

Using ROCKMASTER® millisecond delay electric blasting caps, the contractor carefully selects timing patterns. A bench is made by blasting vertical holes up to within 20 feet of the face. Horizontal hole blasting breaks the remaining 20 feet in place.

Vertical hole blasts are bottom-initiated—ROCKMASTER caps being chosen to move the base of the face out first, and direct throw away from the Canal. Triple rows of horizontal holes are timed to fire: top, bottom, middle. This sequence creates a fracture line in the last 20 feet, decreases backbreak, and assures breakage *in place*. Thus, broken rock can't pitch forward into the Canal.

On tough blasting jobs like this, the "custom-tailored" ROCKMASTER method can't be beat for extreme flexibility and control. Let your Atlas representative show you how ROCKMASTER can go to work for you.

BLAST PATTERNS



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Offices in Principal Cities

(Continued from page 86)

downstream end, access road about 1.6 mi. long. $500,000-$1,000,000. Bids in September.

† **Kentucky**—U. S. Eng., P.O. Box 2127, 237 Fourth Ave., Huntington, W. Va., Catlettsburg Local Protection Proj., Sect. 1, Ohio River, 5,000 lin. ft. earth levee, 600 lin. ft. concrete cantilever wall, 2 gate openings, appurtenant drainage works. $500,000-$1,000,000.

▲† **Massachusetts**—U. S. Eng., 857 Commonwealth Ave., Boston, flood control proj. Adams, $1,900,000; flood control proj., North Adams, $750,000. CD 4/27/44.

▲† **Ohio and West Virginia**—U. S. Eng., 925 Federal Bldg., Pittsburgh 19, Pa., New Cumberland Locks and Dam, Ohio River, concrete lock walls and gate sills on rock fdn., cable crossover gallery in each chamber, discharge manifold structure downstream of lower 600 ft. lock chamber, 4 culvert bulkheads, mooring facilities, bit. paved access road and parking area with drainage facilities, 1 story general service bldg. and transformer valut, placing fill for wid'n. hy. embankment to provide for an addnl. two lanes. $7,000,000 appropriated. Bids in September.

† **O., Wellsville**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., relocating, altering storm and sanitary sewerage systems, incl. alterations to flood protection pumping stations which form integral part of sewerage sys., Wellsville, Ohio River. $500,000-$1,000,000. Bids Feb. 1956.

▲† **Pennsylvania and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., Hildebrand Lock and Dam, Monongahela River, lock, dam and access road, concrete lock walls for 84 ft. by 600 ft. lock chamber, movable crest dam with concrete piers, sills and abutment, access roads, appurtenant facilities; excav. of approach channels, emergency dam and bulkheads, mooring facilities, etc., Total est. $10,000,000. ($1,000,000 appropriated). Bids in February 1956.

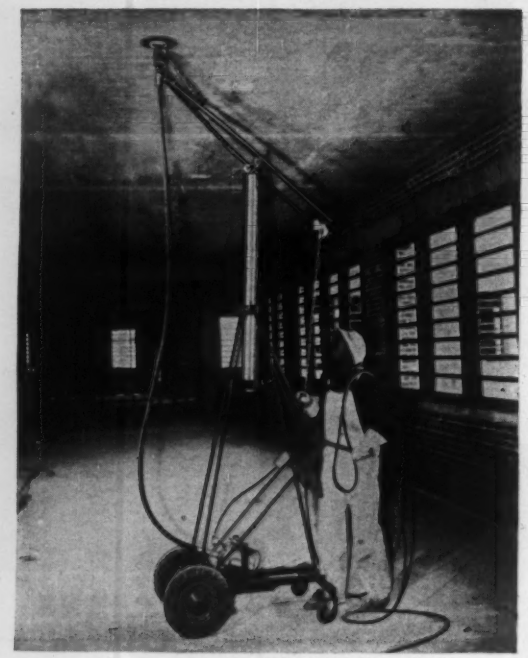
▲† **Tennessee**—U. S. Eng., 303 U. S. Court House, 7 Ave. and Broadway, Nashville, completion of power plant, Cheatham Lock and Dam, Cumberland River $6,360,000. Bids in October. CD 6/18/52.

▲† **Tennessee**—U. S. Eng., 303 U. S. Court House, 7 Ave. and Broadway, Nashville, channel dredging Old Hickory Lock and Dam; Cumberland River, $6,360,000, Bids in August; buildings, grounds and utilities Old Hickory Lock and Dam, Cumberland River, Bids in January 1956.

▲† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Eagle Gorge flood control dam in Green River, Kanasket. $20,500,000 ($1,000,000 appropriation). Bids to be called this fall. CD 3/18/47.

▲† **Washington**—U. S. Eng., City-County Airport, Walla Walla, Ice Harbor Lock and Dam in Snake River. $1,000,000 authorized.

RUBBING CEILINGS?



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▲ **West Virginia and Maryland**—U. S. Eng., P.O. Box 2127, 237 4 Ave., Huntington, W. Va., road relocation, $200,000-$500,000; Section 2, railroad relocation, Sutton Dam, $2,000,000-$5,000,000. Bids in September. CD 6/17/43.

AIRPORTS

▲† **Colo., Denver**—DORMITORIES, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., AM dormitories and dining hall, Lowry Air Force Base $1,217,000. CA 11/21/51.

▲† **Fla., Tampa**—PAVING, etc.—U. S. Eng., P.O. Box 4970, Jacksonville, paving, lighting, maintenance facilities, troop housing and personnel facilities, MacDill Air Force Base, $5,251,000.

▲† **Ky., Fort Campbell**—PAVING, etc.—U. S. Eng., 303 Federal Office Bldg., 7 Ave. and Broadway, Nashville, Tenn., airfield paving, utilities, communications, troop housing, mess and shop facilities. $12,377,000.

▲† **Ky., Louisville**—RUNWAY—U. S. Eng., P. O. Box 59, 830 W. Broadway, Zone 1, Standiford Field, runway exten. and taxiway, rigid type pavement, relocating 7,000 lin. ft. county road and change from 2-lane to 4-lane, exten. to runway and taxiway lighting sys., $1,000,000-$2,000,000.

▲† **N. Y., Purchase**—SQUADRON BASE—U. S. Air Force, The Pentagon, Wash. 25, D. C., Reserve troop carrier squadron base on 40 acre tract at Westchester County Airport, incl. maintenance hangar, apron, appurtenances $3,000,000.

▲† **O., Columbus**—AIRPORT BUILDINGS—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 2 story, masonry, concrete 27,600 sq. ft. air national guard squadron operations and training bldg., $200,000-$500,000. Bids in August; three 3 story, masonry, rein.-con. airmen dormitories, $500,000-$1,000,000; 18,000 sq. ft. masonry armament electronics shop, $200,000-$500,000; 3,800 sq. ft. masonry education wing addn. to chapel, $50,000-$100,000; masonry, rein.-con., 16,400 sq. ft. recreation gymnasium, $200,000-$500,000; masonry, 26,800 sq. ft. service club, $200,000-$500,000; masonry, 25,000 sq. ft. flyaway kit storage facilities, $100,000-$200,000; high temperature hot water line, $100,000-$200,000, bids for all foregoing jobs will be opened in Sept.; masonry 18,000 sq. ft. target intelligence training bldg., $200,000-$500,000 bids in Nov.; masonry 4,700 sq. ft. flight simulator training bldg., $50,000-$100,000, Bids in Nov.; 2,900 sq. ft. addn. to squadron operations bldg., $50,000-$100,000; masonry 5,630 sq. ft. dental clinic, $100,000-$200,000, bids for all foregoing jobs will be opened in Dec.; masonry 9,200 sq. ft. base automotive maintenance shop, $200,000-$500,000, bids late 1956, Lockbourne Air Force Base.

▲† **O., Toledo**—AIRPORT IMPRVS.—U. S. Eng., P.O. Box 2127, 237 Fourth Ave., Huntington, W. Va., runway, taxiway sys., aircraft parking area, hangar, supply and armament storage bldg., motor service shop, motor pool parking, crash and fire station, paint oil storage, underground aircraft fuel storage, supporting utilities, Toledo Express Airport, $1,000,000-$2,000,000.

▲† **O., Youngstown**—AIRPORT IMPRVS.—U. S. Eng., Federal Bldg., Pittsburgh, Pa., 1 story, masonry 6,600 sq. ft. NCO club, $100,000-$200,000; 1 story, 3,300 sq. ft. officers' club, $50,000-$100,000; 10,600 sq. ft. recreation gymnasium, $100,000-$200,000; 1 story, masonry, 21,000 sq. ft. warehousing, $100,000-$200,000; utilities covering extens. of existing mains and on-site utilities, $100,000-$200,000; operational parking apron paving, AFRCTC, grading, draining, 12 in. c. conc. on granular sub-base, 11,600 sq. yd., $50,000-$100,000; parking apron paving, grading, draining 12 in. conc. on granular sub-base 12,000 sq. ft., $100,000-$200,000; storm drains, inlets ditch erosion control, $100,000-$200,000. Bids for all foregoing jobs will be opened in August; 4,100 sq. ft. chapel, $50,000-$100,000, Bids in October; AFRCTC maintenance hangar and shops, $500,000-$1,000,000, bids in September, Youngstown Municipal Airport.

▲† **Okla., Altus**—PAVING, etc.—U. S. Eng., Box 61, Tulsa, Zone 2, paving, fuel dispensing facilities, lighting, operational, training storage, personnel, administrative facilities, utilities, family housing, Altus Air Force Base. $3,758,000.

▲ **Tex., Dallas**—HEADQUARTERS—City of Dallas (Aviation Dpt.) City Hall, Main and Harwood Sts., plans by Pereira & Luckman, archts.-engrs. 9220 Sunset Blvd., Los Angeles, Calif., home base maintenance headquarters for Braniff International Airways occupancy. $4,000,000.

▲† **W. Va., Martinsburg**—AIRPORT—U. S. Eng., P. O. Box 2127, 237 4th Ave., Huntington, Martinsburg Airport, incl. runway-taxiway sys., aircraft parking area, hangar, supply and armament storage bldg., motor service shop, motor pool parking crash and fire station, paint oil storage, underground aircraft fuel storage, supporting utilities. $2,000,000-$5,000,000. Bids late 1956.

▲† **Wyo., Cheyenne**—DORMITORIES, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., AM dormitories and dining halls, Francis E. Warre Air Force Base $1,403,000. CD 7/17/51.

LATIN AMERICA

▲ **Mexico**—OIL PIPE LINE—Petroleos Mexicanos (Pemex) Mexico City, plans crude oil pipe line from Mascupana (Tabasco State) to Puerto, Mexico. $6,400,000. Start in late 1956.

FOREIGN

▲ **Iraq**—Development Bd., Govt. Iraq, Baghdad, Eski-Mosul Dam water and power on Tigris River, north of Mosul City. $44,000,000-$56,000,000.

(Continued on page 90)

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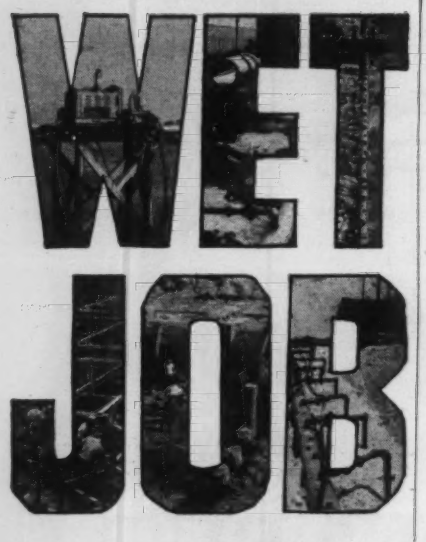

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KINNEAR ROLLING DOORS
Saving Ways in Doorways

(Continued from page 88)

PUBLIC BUILDINGS

▲† **Ala., Fort McClellan**—HOUSING—U. S. Eng., 2301 Grant St., Mobile, Zone 7, plans by Pembleton & Mims, archts.-engrs., Title Guarantee Bldg., Birmingham, family housing. Total $2,000,000.

▲ **Ill., Chicago**—SCHOOLS—Chicago Bd. Educ., 228 N. La Salle St., plans by Loebl Schlossman & Bennett, 430 N. Michigan Ave., Van Steuben High School, California and Peterson Sts. $3,000,000, CD 7/30/45; plans by Childs & Smith, 20 N. Whacker Dr., Chicago, Zone 6, high school, 98 and Michigan Sts., $3,000,000.

▲† **Ill., Granite City**—HOUSING—U. S. Eng., Depot, Col. Leland B. Kuhre, commanding officer, Granite City, 50-unit family housing and two operational structures, etc., imprvs., addns. $1,822,000. CD 9/18/52.

▲ **Ind., Crown Point**—INFIRMARY—Lake Co., Court House, plans by Bein, Hall & Curran, 607 Broadway, Gary, infirmary on State Rt. 55, $1,500,000. CD 2/9/53.

▲ **Ind., Gary**—UNIVERSITY EXTENSION—Indiana University, Bloomington, plans by Beine, Hall & Curran, 607 Broadway, university extension, 33 and Jefferson Sts. $1,000,000.

▲ **Ind., Greensburg** — SCHOOL — Greensburg Community School Bldg. Corp., Greensburg, plans by Everett I. Brown Co., 601 Circle Tower Bldg., Indianapolis, 2 story, rein.-con. Senior High School, incl. educational wing. $1,150,000. CD 2/3/54.

▲† **Ky., Fort Knox**—BARRACKS, etc.—U. S. Eng., 830 W. Broadway, Louisville, two enlisted men's barracks, heating plant, $1,000,000; 1 and 2 story, bsmnt., 37,000 sq. ft. communication school, paving, $500,000; officers' mess hall addn., paving, swimming pool, bath house, $500,000; 5 battalion classroom bldgs., paving, $100,000; 10,319 sq. ft. cold storage addn., parking area, $100,000; 3 regimental dispensaries, paving, $200,000; 2 branch post exchanges, paving, $150,000; hardstand, 13,400 sq. yd. paving, $100,000.

▲ **Md., Hagerstown**—SCHOOL—Washington Co. Bd. Educ., Hagerstown, plans by McLeod & Ferrar, 1200 18 St. N. W., Wash., D. C., North Hagerstown High School, $3,000,000.

▲ **Minn., Aurora**—SCHOOL—Bd. Educ., W. O. Anderson, clk., plans by Jyring & Whiteman, Hibbing, high school addn. $1,125,000. Bids taken late September.

▲ **Minn., Minneapolis**—AUDITORIUM—City, A. A. Olson & Melvin Dahl, mgrs., complete east wing of municipal auditorium, Third Ave. and Grant St. $2,000,000.

▲ **N. H., Portsmouth**—SCHOOL—City, Raymond I. Beal, 126 Daniel St., plans by John N. Brownrigg, Jr., for Kenneth G. Reynolds Assoc., 143 Washington Ave., Albany, N. Y., high school west end of Summit Ave. $2,500,000. Weiskopf & Pickworth. 2 W. 45 St., New York, N. Y., structural engrs. Teeling & Spindler, 82 State St., Albany, N. Y., mech. engrs. CD 11/27/53.

▲ **N. J., Paterson**—GARAGE—Paterson Parking Auth., City Hall, 5 story municipal parking garage on block bounded by Broadway, Washington, Van Houten and Church Sts., $4,500,000, Bernard Lamb, 272 Franklin Turnpike, Hohokus, owner's engr.

▲ **O., Ashtabula**—SCHOOLS—Ashtabula Local School Dist., $1,200,000 bond election Nov. 8, schools. CD 11/25/49.

▲ **O., Cleveland**—HOUSING—Cleveland Metropolitan Housing Auth., Ernest J. Bohn, dir., City Hall, Zone 14, plans by Joseph Ceruti & Assoc., 7113 Euclid Ave., Ward & Conrad, Hanna Bldg., Zone 15, and Anthony Ciresi, 7113 Elclid Ave., 784 public housing units in Garden Valley Development, $11,000,000, Barber & Magee, 1900 Euclid Bldg., struct. engrs., Jones, Carey & Millar, 1740 E. 12 St., Zone 14, mech. engrs.

▲ **O., Columbus**—SCHOOLS—Bd. Educ., Truro Twp. School Dist., Thomas B. Southard, E. Broad St., $1,018,000 bond election Nov. 8, schools.

▲† **O., Dayton**—RECREATION HALL—Veterans Admin., Munitions Bldg., Wash., D. C., recreation hall at Veterans Admin. Center. $1,400,000. Construction in 1957.

▲ **O., Dover**—SCHOOL—Dover Bd. Educ., $1,200,000 bond election Nov. 8, schools. CD 11/4.

▲ **O., Garfield Heights**—SCHOOL—City, Bd. Educ., 4900 Turney Rd., Zone 25, plans by Geo. S. Voinovich, 1922 E. 107 St., Cleveland, Zone 6, elementary school, Bangor Ave. and E. 126 St. $1,000,000. Completed in Sept. 1956. CD 3/18.

▲ **O., Maple Heights**—SCHOOL—Maple Heights Bd. Educ., Herbert L. Greene, chn. bldg. comn., 5500 Clement Dr., $1,200,000 bond election Nov. 8, Junior High School, Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, Zone 20, archts. CD 7/15.

▲ **O., New Philadelphia**—SCHOOL—Bd. Educ., $1,780,000 bond election Nov. 8, school imprvs., expansion.

▲ **O., Painesville** — HOSPITAL — Bd. County Comrs., Lake Co., Court House 47 N. Park Place, $1,500,000 bond election Nov. 8, 4 story hospital wing. CD 5/23/52.

▲ **O., Upper Arlington**—SCHOOL—Bd. Educ., $1,200,000 bond election Nov. 8, grade school on 6 acre tract at Wickliff and Cimarron Rds.

▲ **O., Wickliffe**—SCHOOL—Br. Educ., 29240 Euclid Ave. $1,100,000 bond election Nov. 8, high school, Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, Zone 20, archts.

▲† **Pa., Phila.**—QUARTERS—Dpt. Navy, Phila. Naval Base, plans by Vincent G. Kling, 917 Corinthian Ave., bachelor officers quarters, Naval Receiving Station. $1,428,000.

▲ **Tex., Garland**—POWER PLANT, etc.—City, City Hall, voted bonds, power plant imprv. and expansion $1,900,000; new electric power plant unit, $1,000,000 CD 4/11.

▲ **Wash., Poulsbo**—SCHOOL—North Kitsap School Dist. 400, Poulsbo, plans by Botesch-Brown & Asocs., Commerce Bldg., Everett, high school, $1,000,000. CD 3/16.

▲ **Wash., Quincy**—SCHOOL—School District 144, Quincy, plans by J. W. Maloney & J. H. Whitney, Larson Bldg., Yakima, high school. $1,000,000. CD 6/8.

▲ **Alta., Edmonton**—HIGH SCHOOL—Edmonton Public School Bd., Edmonton, plans by W. W. Butchart, Edmonton, R. S. Sheppard Composite High School, $2,500,000. CD 2/7. Bids in September.

▲ **Ont., Owen Sound**—HOSPITAL UNIT—Owen Sound General & Marine Hospital, Owen Sound, plans by Craig & Madill, 734 Spadina Ave., Toronto, hospital unit, 12 St. N. and Sixth Ave. $1,163,000. CD 1/9/51.

COMMERCIAL BUILDINGS

▲ **Calif., Fresno**—HOSPITAL—Fresno Community Hospital, 1234 "S" St., plans by Alastair Simpson, 64 N. Fulton St., Fresno Community Hospital addn. $3,000,000. CD 6/17.

▲ **Calif., Mountain View**—STORE—Sears, Roebuck & Co., Geary and Masonic Sts., San Francisco, 130,000 sq. ft. store, San Antonio Road Shopping Center. $1,500,000.

▲ **Calif., San Bruno**—HOMES—Chris. & George McKeon, 550 Taraval St., San Francisco, 4,000-home subdivision, near here, $70,000,000.

▲ **Calif., San Rafael**—HOMES—John P. Stegge, 1400 Lemon St., Vallejo, 6,000 home subdivision and associated facilities near McNears Point, near here, $100,000,000.

▲ **Iowa, Cedar Rapids**—DORMITORIES, etc.—Coe College, Cedar Rapids, two dormitories. $700,000; student union bldg. $400,000.

▲ **Ky., Louisville** — HOSPITAL — Louisville Conference Methodist Church, c/o Nevin & Morgan, archts. Starks Bldg., Methodist Evangelical Hospital in Louisville Medical Center, Preston and Chestnut Sts., $4,000,000. E. R. Ronald & Assoc., 554 St. Third St., Louiville, consult. engrs. CD 11/28/49.

▲ **N. J., Atlantic City**—MOTEL, etc.—3400 Boardwalk Corp., 3542 Atlantic Ave., plans by J. Vaughn Mathis, Guarantee Trust Bldg., motel, swimming pool and restaurant. $1,000,000.

▲ **N. Y., New York**—OFFICE—Syndicate, c/o Henry G. Greene, 855 Sixth Ave., Zone 1, 27 story office 66-74 Beaver St., $3,000,000.

▲ **N. Y., New York**—OFFICE—Union Carbide & Carbon Corp., 30 E. 42 St., New York, Zone 17, plans by Skidmore, Owings & Merrill, 575 Madison Ave., 41 story office, Park and Madison Aves., 47 to 48 Sts. (270 Park, site of Marguery). $40,000,000. Proposed Project at Greenburgh, N. Y., abandoned. CD 6/6/51, under Webb & Knapp, as owner.

▲ **O., Brecksville**—HOMES—Herbert Luxenburg, Mid-Century Homes, 755 Carnegie Ave., Cleveland, Zone 15, 70 frame, brick ranch type homes, Luxenburg Blvd. south of Wallings Rd., Broadview Heights. $1,400,000.

▲ **O., Cincinnati**—HOSPITAL—Good Samaritan Hospital, Clifton Ave., plans by Maguolo & Quick, Temple Bar Bldg., 6 story, 160,500 sq. ft. hospital addn. air-conditioned. $6,000,000. Bids early in 1956.

▲ **O., Cleveland**—OFFICE, etc.—R. A. McCormick, 1018 Society for Savings Bldg., Zone 14, plans by Wyatt C. Hedrick, 5201 Fannin St., Houston, Tex., and Jack Kress Jr., 22550 Lorain Rd., Zone 26, office, warehouse and parking garage, Lakeside Ave. east of Ninth St. $4,000,000.

▲ **O., Cleveland**—HOSPITAL—St. Vincent's Charity Hospital, Sister Mary Francetta, admin., 2222 Central Ave., Zone 15, out-patient dept., $400,000; accident room, $100,000; boiler room and laundry, $250,000, psychiatric and geriatric bldgs. Total est. $5,000,000-$7,000,000. Geo. S. Rider Co., Terminal Tower, Cleveland, Zone 13, consult. engrs.

▲ **O., Elyria**—SHOPPING CENTER—Abbe Holding Co., c/o J. N. Rassler, realor, Elyria, 10 story shopping center, Cleveland St. and Abbe Rd. area, $1,000,000. Construction in November.

▲ **O., Euclid**—HOMES—Kapel Constr. Co., 26330 Lake Shore Blvd., Zone 23, plans by Raymond A. Davies, Hillcrest Dr., Painesville, 175 homes, Braeburn Park, $3,150,000; 40 homes in Sherwood Forest section, $1,000,000.

▲ **Okla., Tulsa**—SHOPPING CENTER—E. F. Rice, Kennedy Bldg., plans by McCune & McCune, Utica Square, shopping center, 21 and Yale St. $2,000,000.

▲ **Tex., Beaumont**—HOSPITAL—St. Therese Hospital, 1105 Broadway, hospital expansion, $1,000,000.

▲ **Tex., Dallas**—HOTEL—B. P. Dunlap, H. E. Williams, Jr., W. A. Wilson & Caruth, c/o W. W. Caruth, Jr., Developer, 5803 Greenville St., plans by Charles Stevens Dilbeck, 3113 McKinney St., 325-room brick, stone hotel, $3,500,000.

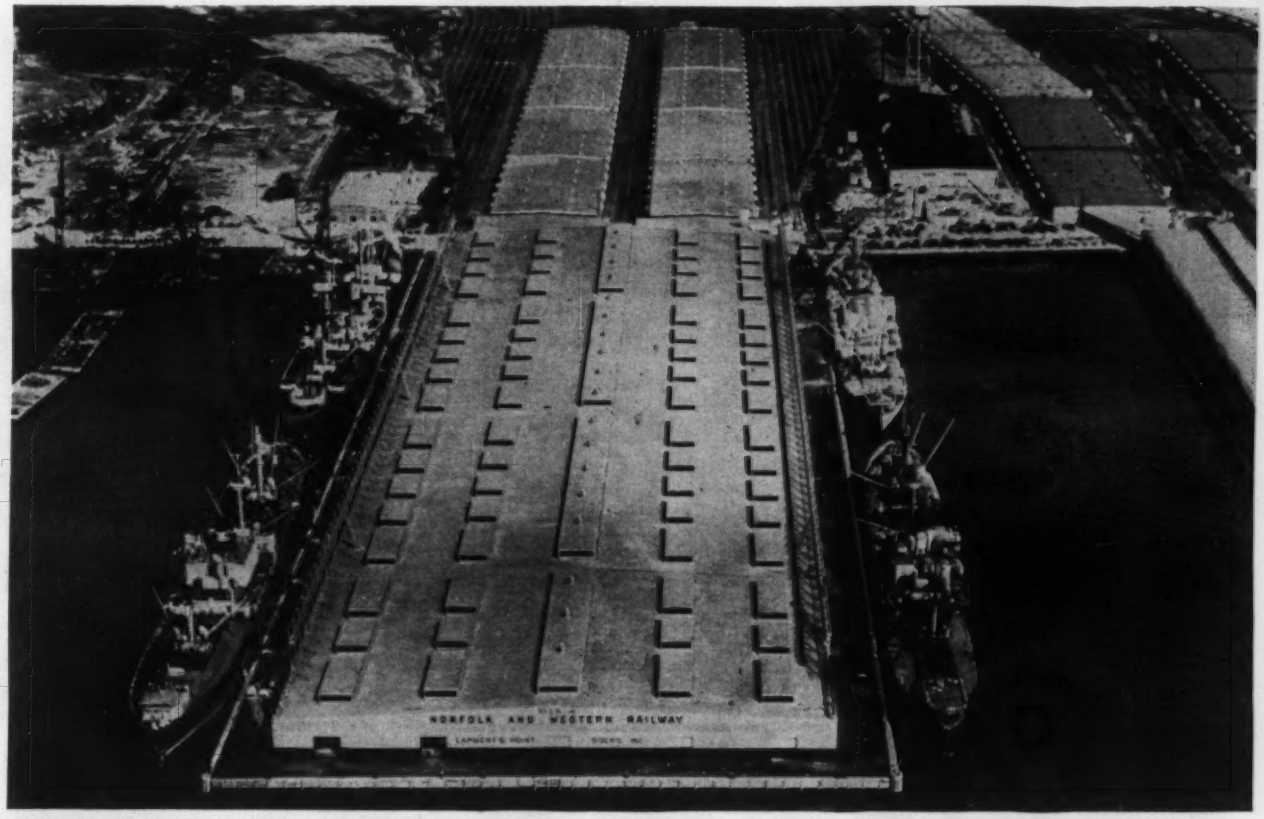
▲ **Wis., Milwaukee**—OFFICE—Standard Oil Co., 910 S. Michigan Ave., Chicago, Ill., 2 story, 74,000 sq. ft. office. $1,000,000.

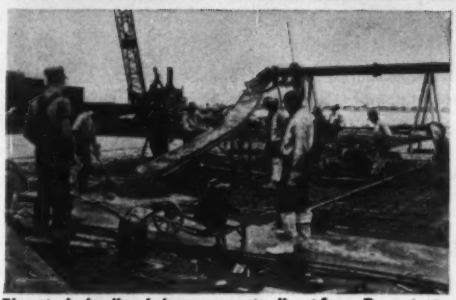
▲ **Que., Montreal**—OFFICE, etc.—Rev. Grey Nuns, 1190 Guy St., plans by Jean M. Lafleur, 17 Nicolson St., Valleyfield, 8 or 10 story, bsmnt., rein.-con. brick or stone, office, incl. garage, stores, bowling alley and office space. $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Ky., Henderson**—PLANT—Reynolds Metals Co., 2500 S. 3 St., Louisville, aluminum plant $168,500,000. Options on land have been taken.

(Continued on page 93)





Elevated pipeline brings concrete direct from Pumpcrete at central mixing plant. Concrete was pumped as far as 1500 feet for pier deck. Concrete for pier deck alone totaled 24,246 cu. yd.

Concrete piles were formed in this casting yard behind the pier. Concrete was delivered through pipeline directly into hoppers. A third pipeline was also run to the land warehouses for placing foundations and floors.

Pumpcrete® places concrete for largest single-deck pier on Atlantic seaboard!

70 miles of precast piles under 10 acres of concrete deck!

A concrete and engineering triumph, Norfolk and Western Railway's new, modern pier at Lambert Point, Norfolk, Va., contains 70 miles of precast piles under a 10-acre concrete deck. And it was all placed by Pumpcrete...the pump that delivers concrete by pipeline!

Pumpcrete was also used to place foundations and floors for two land warehouses behind the pier. Three separate pipelines were used from Pumpcrete located next to a unique central mixing plant. One delivered concrete to the pile casting yard, another to the pier and a third to the land warehouses.

By simply changing lines, Pumpcrete delivered concrete immediately to any one of the work areas. And being located right with the mixing plant, concrete was discharged directly into Pumpcrete—thus eliminating additional hauling equipment.

This is another example why Pumpcrete is being used more and more to save time, eliminate expensive hauling equipment and deliver better concrete faster. Look into Pumpcrete's advantages for your next job—you'll be glad you did! See your local Rex Distributor or write: CHAIN Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CONSTRUCTION REX MACHINERY

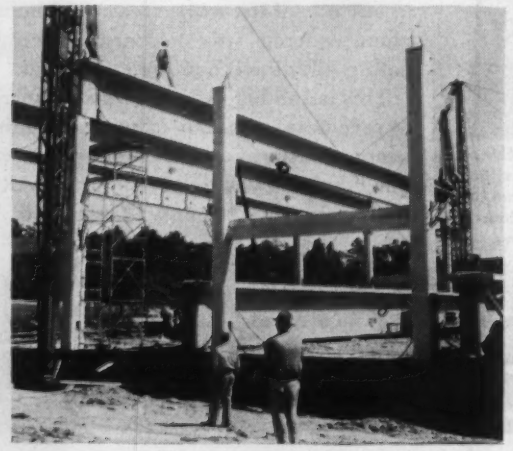
CHAIN BELT COMPANY

Senior High School Gymnasium, Greensboro, N. C.—L. B. Gallimore, Gen. Contr.; Arnold Stone Co. and George E. Newton and Son, Sub Contrs.

Concrete...clear span 118 ft.

THE roof framing of this gymnasium consists of seven prestressed concrete girders, precast on the floor and raised to position on columns cast in place at the same time. The columns are 120′ center to center of bearing. The girders have 118′ clear span above the playing floor.

For this design (which cost $10,000 less than the open steel truss alternate) a 2½″ slump concrete, 4500 psi at time of prestressing and 5000 psi at 28 days, was specified. As processed and delivered by truck mixers of certified design, capacity and water control accuracy, slump was uniform and strength exceeded specifications, reaching 4500 psi within a maximum of 6 days.



Girders are a modified T-shape, 73″ deep with 48″ top flange, 18″ bottom flange and 8″ web thickness except 18″ at ends which are 18″ full depth. Prestressing was by post-tensioning with 12 cables of 18 high tensile 0.190 diam. wires. 2″ camber built into girders was increased to approx. 3⅜″ by prestressing. Two 12-wire cables through the 18″ x 24″ supporting columns were tied to girders. Final packing of joints resulted in rigid frame for live load.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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CHAIN BELT COMPANY
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CHALLENGE MANUFACTURING CO.
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CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

CONSTRUCTION MACHINERY CO.
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IMPERIAL CONSTRUCTION EQUIP. CO.
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THE JAEGER MACHINE COMPANY
Columbus, Ohio

THE T. L. SMITH COMPANY
Milwaukee, Wis.

WILLARD CONCRETE MACHINERY CO. LTD.
Lynwood, Calif.

WORTHINGTON CORPORATION
Plainfield, N. J.

(Continued from page 90)

▲ **Mich., Detroit**—FACTORY—Udylite Corp., 1651 E. Grand Blvd., factory producing metal plating equipment and supplies, **$1,750,000.**

▲ **Mich., Wayne**—PLANT—Lincoln-Mercury Div. Ford Motor Co., 6200 W. Warren St., plans by Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, 300,000 sq. ft. Mercury Plant addn. **$4,000,000.**

▲ **O., Ashtabula**—FACTORY—Ashtabula Mfg. Co., c/o Porter McKinnon, Ashtabula, 100x200ft., cement block, steel factory for metal finishing, on 15½ acre tract on W. 30 st. **$1,000,000.**

▲ **Okla., Ponca City**—Cities Service Oil Co., Ponca City, 6,000 bbl. reforming unit for refinery, **$1,000,000.** CD 9/29/50.

▲ **Tex., Beaumont**—REFINERY UNITS—Magnolia Petroleum Co., South Beaumont, Tex., hi-octane and distillate refinery unit, **$14,000,000;** refinery unit to process butanes and propanes, **$4,500,000;** constr. thermofor catalytic cracking unit, **$2,50,000;** tovaformer unit, **$1,500,000** vacuum flash tower unit, **$500,000;** Plants No. 4 cracking unit expansion, **$2,000,000.**

▲ **Tex., Gregory**—PLANT—Reynolds Metals Co., Gregory, production plant expansion. **$5,000,000.**

▲ **Tex., Houston**—WAREHOUSE, etc.—Allied Stores Corp. (Joskes of Texas, subsidiary), 401 Fifth Ave., New York, N. Y., plans by Bartlett Cocke, 3501 Broadway, San Antonio, 219,000 sq. ft. rein.-con. frame warehouse, **$1,750,000.** W. E. Simpson Co., 945 Milam Bldg., San Antonio, consult. engr. CD 10/8/53.

▲ **Tex., Houston**—PLANT—Goodyear Tire & Rubber Co., Inc., 407 N. Main St., synthetic rubber producing plant, incl. reactors, refrigeration units. **$6,000,000.** incl. equipment. Bids for construction soon. CD 5/26.

▲ **Tex., Port Arthur**—REFINERY—Magnolia Petroleum Co., Magnolia Bldg., Dallas, refinery expansions. **$25,000,000.**

▲ **Wash., Wenatchee**—PLANT—Revere Copper & Brass Inc., 230 Park Ave., New York, N. Y., aluminum reduction plant. **$50,000,000.**

UNCLASSIFIED

▲† **Calif., Herlong**—FACILITIES—U. S. Eng., 1209 8 St., Sacramento, operational and maintenance facilities, Sierra Ordnance Depot, **$1,075,000.**

▲ **Colorado**—RURAL DISTRIBUTION LINES—San Isabel Electric Assn., Pueblo, 339 mi. rural distr. lines, 64 mi. 69 kv transmission line, sub-station facilities and sys. imprvs., Pueblo Co. **$2,000,000.**

▲ **Minn., St. Paul**—STADIUM—City, Dpt. Parks, Playgrounds & Public Bldg., B. T. Holland, comr., City Hall and Court House, plans by A. H. Schroeder, city archt., City Hall and Court House, stadium at site E. of Snelling Ave. between N. P. tracks and Chicago & Northwestern tracks, **$1,500,000,** Osborn Eng. Co., 70161 Euclid St., Cleveland, O., consult. engr. CD 11/9/53.

▲ **N. Y., New York**—PIERS—Dpt. Marine & Aviation, Pier A, North River, Zone 4, Proj. D-49, Pier 36, North River, pier, pier shed, bulkhead shed, **$6,965,000.** To go ahead in 1957-1958;
Proj. D-50, Pier 79, North River, pier, pier shed, bulkhead shed, **$7,750,000.** To go ahead after 1960;
Proj. D-90, Pier 9, East River, **$1,625,000.** To go ahead after 1960. CD 8/17/45.

▲ **N. Y., New York**—MARINE TERMINAL—Dpt. Marine & Aviation, Pier A, North River, Zone 4, Marine Terminal for use by Holland-American line, Pier 40, replacing present piers 37, 38, 39, 40 and 41 at Houston St., Proj. D-63, **$15,000,000;** CD 8/17/45.

▲† **Ohio**—NIKE SITES—U. S. Eng., Federal Bldg., Pittsburgh, Pa., five Nike sites in Cleveland Defense Area, launcher and control sites, troop housing and supply, administration facilities, and headquarters bldg. **$5,000,000-$10,000,000.** Bids early 1956.

▲† **Pennsylvania**—NIKE—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, Pittsburgh Nike II control and launching area site PI-03-C1, 30x76 ft. mess hall, 3 underground missile storage structures, 30x40 ft. missile assembly and test bldg. with boiler room addn., 21x41 ft. generator bldg., acid storage shed, enlisted men's barracks and officers' quarters, **$1,000,000-$2,000,000,** bids in September; control and launching area Site PI-37-C1, 30x76 ft. mess hall, 3 underground missile storage structures, missile assembly and test bldg., with boiler room addn., generator bldg., acid storage shed, enlisted men's barracks, **$1,000,000-$2,000,000,** bids in December; control and launching area Site PI-43-C1, 30x76 ft. mess hall, 3 underground missile storage structures, missile assembly and test bldg., with boiler room addn., generator bldg., acid storage shed, enlisted men's barracks and officer quarters, **$1,000,000-$2,000,000,** bids in September; control and launching area Site PI-93-C1, 30x76 ft. mess hall, 3 underground missile storage structure, missile assembly and test bldg., with boiler room addn., generator bldg., acid storage shed, enlisted men's barracks and officers quarters, **$1,000,000-$2,000,000,** bids in September.

▲ **South Dakota**—RURAL DISTRIBUTION LINES—Rushmore G. & T. Electric Co-operative, Rapid City, S. D. 16,500 kw steam generating unit and substation facilities at Kirk. **$3,500,000.** CD 1/6/51.

▲ **Tex., Houston**—WHARVES—Port Comn., Navigation Dist., c/o J. C. Bracewell, Chmn., Wharf 3, bond election September 17, Job. 1, uncovered wharf, $1,750,000; loading and unloading facilities, $1,250,000; "Marine Leg" unloading facilities for grain, $500,000; soil-dumping, filling area, $1,000,000; Lockwood & Andrews, 904 Union Natl. Bank Bldg., consult. engrs.; Job 6, closed wharf, $1,750,000; Job. 7, closed wharf, $1,500,000. CD 9/17/54.

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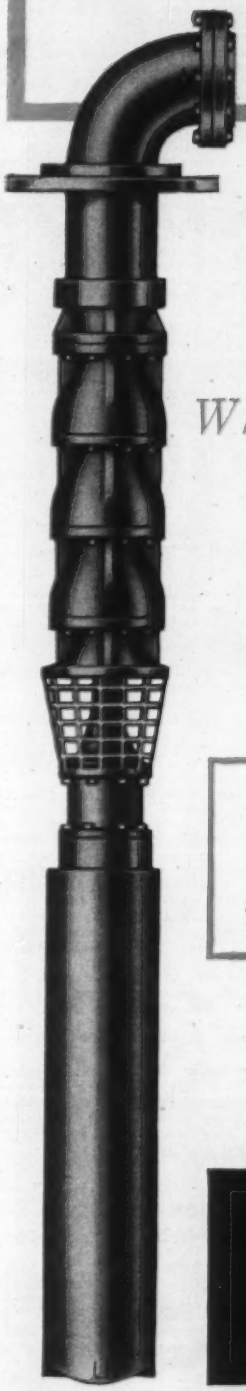

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Some typical applications

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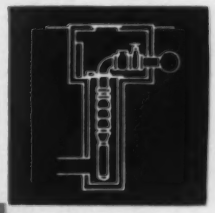
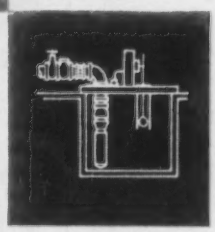


fire protection

sump operation

cooling tower service



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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 12 Connecticut

STREETS AND ROADS

September 7 Massachusetts September 12 Connecticut

BUILDINGS—LB & CA

R. S. Noonan, Inc., 26 N. Duke St., York, Pa., CA Approx. **$800,000.** BANK BLDG., St. Paul and Main Sts., BURLINGTON, VT. Howard National Bank & Trust Co., 116 Church St., Burlington, Vt. Severud-Elstad-Krueger, 415 Lexington Ave., New York, N. Y., structural engrs. Bids Aug. 18. CD 8/2.

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass. LB **$543,099**, est. $500,000. Elementary SCHOOL Ward 6, off Cherry St., GLOUCESTER, MASS. City, City Hall, Gloucester, Mass. Bids Aug. 17. CD 7/20.

▲ **O. D. Purrington, Inc.**, 171 Westminster St., Providence, R. I., LB **$1,019,000.** HOSPITAL, West Chester St., 66-(G), NANTUCKET, MASS. Nantucket Cottage Hospital, 21 W. Chester St., Nantucket, Mass. Bids Aug. 23. CD 8/3.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 15 Maryland

STREETS AND ROADS

September 15 New York

Thompson-Starrett Co., Inc., 254 W. 54 St., New York 19, N. Y. CA **$993,299**, Contr. 442, Margaretville-Arkville sewage treatment plant, incl. control bldg., digester bldg., 2 primary settling tanks, 4 sludge drying beds in glass enclosure, sludge lagoon, filter dosing tank, 6 intermittent sand filter beds, water supply sys., unsewered wastes tanks, outlet sewer and various equip., systems of piping, other appurtenances, required for operation and control of plant bldg., superstructures will have brick walls with flat roofs of rein.-con. slabs, 1,720 ft. 15 in. outfall sewer, 1,800 ft. access road with paved width of 18 ft., NEW YORK. Bd. Water Supply, 120 Wall St., New York, N. Y. Bids July 12. CD 7/14, under LB.

▲ **Morrison-Knudsen Co., Inc.**, 122 E. 42 St., New York, N. Y., CA **$5,900,442**, Galop Island, South Channel, St. Lawrence Co., St. Lawrence Contr. 15, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids June 3. CD 6/7, under LB.

▲ **General Electric Co.**, 1 River Rd., Schenectady, N. Y. CA **$606,975**, twelve 115 kv units power circuit breakers, St. Lawrence Power Proj. Spec. No. PA St. Lawrence Co., St. Lawrence Contr. 15, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids May 31. CD 6/2, under LB;
Westinghouse Electric Co, Inc., 195 Broadway, New York, N. Y., CA **$880,650**, twelve 230 kv units power circuit breakers for St. Lawrence River Proj. (New York).

▲ NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton,
Public Constructors, Inc., Pleasantville, N. J., CA, **$4,566,882.** grading, bridges, paving 3.655 mi. Route 42, Sections 13B and 14A (North-South Freeway) from Browning to Lower Landing Rds. in Bellmawr and Runnemede, F-193 (4), Camden and Gloucester Counties. Bids July 26, awarded Aug. 22. CD 8/1, under LB.

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. 4th St., Harrisburg,
Ryan Brothers, 17 S. 2nd St., Clearfield, Pa., LB **$1,097,861.** constr. 0.57 mi. (Sec. 37N), Northeastern Exten., Abington Twp., Lackawanna Co. Bids Aug. 24. CD 8/1.

BUILDINGS—LB & CA

▲ **S. S. Silberblatt, Inc.**, 25 S. 45 St., New York 19, N. Y., CA **$12,672,400**, foundation and superstructure, steel panel facing for Linden HOUSES, area bounded by Stanley, Schenck, Cozine and Vermont Aves., Proj. NYC-23, BROOKLYN, N. Y. Grand total $16,240,077. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids July 12. CD 7/14, under LB;
Heating Maintenance Corp., 220 E. 138 St., New York 51, N. Y., CA **$1,283,700**, heating and ventilating (Brooklyn, N. Y.);
Spitzer Electric Co., 60 W. 18 St., New York 11, N. Y., CA **$986,000**, electric, (Brooklyn, N. Y.);
Lipsky & Rosenthal, 155 Utica Ave., Brooklyn 13, N. Y., CA **$1,297,997**, plumbing, (Brooklyn, N. Y.).

▲ **H. R. H. Constr. Corp.**, 16 W. 46 St., New York, N. Y. LB **$5,554,000** (3 bidders) foundation and general constr. Carver HOUSES, Sect. II, Bldgs. Nos. 7 to 13 and 1 story exten. for CHILDREN'S CENTER, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Aug. 23;
Afgo Engineering Corp., Adelphi St., Brooklyn, N. Y., LB $387,000 (6 bidders) heating (NYCHA);
Herman H. Schwartz, Inc., 179 S. Portland Ave., Brooklyn, N. Y., LB **$408,740** (8 bidders) electric (NYCHA);
Paramount Plumbing & Heating Co., 336 E. 92 St., New York, N. Y., LB **$619,000** (6 bidders) plumbing (NYCHA).

▲ **Paul Tishman Co.**, 21 E. 70 St., New York 21, N. Y. CA **$5,982,744**, foundation and general constr. General Grant HOUSES, Proj. NY 5-30, Sect. II, incl. Bldgs. No. 6 to 9 (inclusive) W. 125 St., Morningside Ave., W. 123 St., Amsterdam Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids June 15. CD 6/17, under LB.
Fein-Schlosberg, Inc., 1770 Second Ave., New York 28, N. Y., CA **$738,980**, plumbing, (NYCHA).

▲ **John A. Johnson**, 303 41 St., Brooklyn 32, N. Y. CA **$4,613,050**, foundation and general contract for LaGuardia HOUSING, Proj. NY 5-21, Sect. II, Montgomery, Cherry, Rutgers and Madison Sts., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids June 1. CD 6/3, under LB.
C. K. Rehner, 4920 Skillman Ave., Woodside 77, N. Y., CA **$642,237**, plumbing (NYCHA).

Clement S. Crystal, Inc., 218 W. 49 St., New York, N. Y. CA Est. **$550,000.** OFFICE BLDG. alteration and an addnl. 24 story annex to the building, air-conditioned, 65 W. 39 St., NEW YORK, N. Y. R. & K. Corp., 1400 Broadway, New York, N. Y. CD 8/30/54.

▲ **R. S. Noonan, Inc.**, 26 N. Duke St., York, Pa. CA Est. **$2,500,000.** Buildings 1 and 2, 1 story, 250x400 ft. concrete block; 1 story, 200x275 ft. steel constr. PLANT, near CLEARFIELD, PA. Curtis-Wright Corp., Passaic and S. Main Sts., Woodridge, N. J.

▲ **Jones-Hettelslater Constr. Co.**, 1911 Baltimore St., Kansas City, Mo. CA Est. **$2,500,000.** 1 and 2 story 100x306 ft. concrete block, concrete, steel PLANT, EVERSON, PA. Allied Mills, Inc., Everson, Pa.

▲ **Swindell Dressler Corp.**, Aspinwall, Pa. CA Est. **$5,000,000.** design and construct 1 story, approx. 500,000 sq. ft. block, steel FACTORY, FORD CITY, PA. Eljer Co., Div. of Murray Corp., Railroad St., Ford City, Pa.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa. CA Est. **$5,000,000.** 1 and 2 story, brick, steel frame development and glass RESEARCH LABORATORY, Harmar Twp., near PITTSBURGH, PA. Pittsburgh Plate Glass Co., Gateway Center, Pittsburgh, Pa. Bids Aug. 2. CD 7/22.

▲ **Mellon Stuart Co.**, 210 E. Parkway, Pittsburgh, Pa. LB **$1,400,000.** two buildings, new 10 story building, 6 story existing bldg. addn., incl. OFFICE and BANKING facilities, PITTSBURGH, PA. Federal Reserve Bank of Cleveland, 716 Grant St., Pittsburgh, Pa. William York Cocken, 800 Century Bldg., Pittsburg, Pa. archt. Frank T. Wadlow, Martin Bldg., Pittsburgh, Pa., electrical engr.

H. C. Beck Co., 1st Natl. Bank Bldg., Dallas, Tex. LB **$800,000.** 3 story, concrete block, steel concrete floor PARKING GARAGE, over the 4th Ave. Penna R.R. Station, PITTSBURGH, PA. The T. A. McCormick Co., Soc. for Savings Bldg., Cleveland, O. Horley, Roberts & Conwell, Federal St., Pittsburgh, Pa., assoc. archts. Bids Aug. 10. CD 8/17.

▲ **Esco Constr. Co.**, 8641 Colesville Rd., Silver Spring, Md., Owner Builds, **$1,000,000.** 100-unit MOTEL, Route 240 between Rockville and Gaithersburg, ROCKVILLE, MD. John F. Stann, 706 E. Montgomery St., Rockville, Md., archt.

W. E. Bickerton Constr. Co., 101 W. 22 St., Baltimore 18, Md. CA **$613,700.** masonry Wellwood Elementary SCHOOL, Smith Ave., west of Greenspring Ave. north of Baltimore, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids July 27. CD 8/3, under LB.

▲† **Joseph B. Baden Constr. Co., Inc.**, 418 Randolph St. N.W., Wash. D. C., LB **$3,982,000** (4 bidders) constr. (except elevators) PRE-CLINICAL MEDICAL BLDG., Howard University, WASH., D. C. General Services Admin., P. Bldg. Serv., 19 and F Sts., N.W., Wash. 25, D. C. Bids Aug. 23 CD 7/12.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
N. C.—**Columbus Contrs.**, Whiteville, N. C., LB **$127,386**, est. $125,000-$150,000. bridges and culverts, NC 37, Proj. 1344, S-825 (1), S-357 (1), Perquimans, Chowan and Gates Counties;
N. C.—**John H. Brinkley**, Thomasville, N. C., LB **$601,625**, est. $400,000-$500,000, structures 9.13 mi. US 421, Proj. 5345, IN-FI-712 (2), U-712 (3), Guilford Co.;
N. C.—**Blythe Bros. Co.**, Box 989, Charlotte 1, N. C. LB **$389,234**, est. $300,000-$400,000, structures, 5.19 mi. US 1, Proj. 5693, F-232 (5), Moore Co. Bids Aug. 23. CD 8/12.

▲ **GEORGIA**—State Bridge Bldg., Auth., No. 2 Capitol Sq., Atlanta,
Ga.—**Oliver Green, Gay, Ga.**, LB **$179,461** bridge at Walnut Creek 2.271 mi. approaches on Macon-Milledgeville Rd., BA (3) 1680-C (2), Bibb Co.;
Ga.—**H. M. Pafford, Jr.**, Box 145, Waycross, Ga., LB **$583,812.** bridge at Satilla River, 2 overflow bridges and 2.98 mi. approaches on Folkston-White Oak Rd. State Rte. 252, Proj. BA (3) 1215 (3), Charlton and Camden Counties;
Ga.—**Sommers Constr. Co.**, City Hall Bldg., Vidalia, Ga., LB **$167,179.** 3 overflow bridges at Ocmulgee River and 1.431 mi. paved approaches Hazelhurst-Lumber City, State Rte. 27, Proj. BA (3) 1851-B (16), Jeff Davis Co.;
Ga.—**Scott Constr. Co., Inc.**, Box 71, Thomasville, Ga., LB **$544,182.** wid'n. existing bridges, 2 overflow bridges and 0.703 mi. paved approaches on Oconee River on Glenwood-Mt. Vernon Rd., State Rt. 30, Proj. BA (3) 1049 (8), Wheeler and Montgomery Counties. Bids Aug. 19. CD 8/11.

▲ **GEORGIA**—State Hy. Dpt., No. 2 Capitol Sq., Atlanta,
Ga.—**Knox Bros., Inc.**, Box 311, Thomson, Ga., LB, **$96,483** grading, paving, 1 bridge 5.59 mi. St. Clair-Keysville Rd. FAS Rte. 806, FASP S 0806 (4), Burke and Jefferson Counties;
Ga.—**E. F. Groover**, Box 568, Moultrie, Ga., LB, **$692,241**, grading, paving, wid'n., resurf. new constr. 11.262 mi. Moultrie-Sylvester Rd. 33 and Moultrie Tifton Rd., State Rte. 35 reconstr. 1.034 mi. Tifton Rd. FAP F 033-1 (3), F 033-1 (4) and F 098 (1) Colquitt Co.;
Ga.—**Kennedy Constr. Co.**, Box 301, Ashburn, Ga., LB, **$100,316**, grading, paving, wid'n., resurf. new constr. 11.262 mi. Moultrie-Sylvester Rd. 33 and Moultrie Tifton Rd., State Rte. 35 reconstr. 1.034 mi. Tifton Rd. FAP F 033-1 (3), F 033-1 (4) and F 098 (1) Colquitt Co.;
Ga.—**Wright Contg. Co.**, Box 1537, Columbus, Ga. LB, **$516,278**, wid'n., reconstr., resurf. 12.362 mi. and wid'n. bridge over Flint River, State Rte. 85, FAP F 074 (2) (4), Fayette and Clayton Counties;
Ga.—**G. H. Law**, Box 461, Gainesville, Ga., LB, **$158,665** grading, paving and 1 bridge 4.615 mi. Coal Mountain-Gainesville Rd., State Rte. 141, FASP S 0862 (3) Forsyth and Hall Counties. LB **$80,997.** grading, paving 3.409 mi. Matt-Silver City Rd., FAS Rte. 1678, FASP S 1678 (1) Forsyth Co.;
Ga.—**Suber & Co., Inc.**, Whitmire, S. C., LB, **$1,189,745** grading, paving 5.235 mi. State Rte. 13, FAP FI-013-1 (4), Gwinnett Co.;
Ga.—**Wilkes Constr. Co.**, Box 593, Washington, Ga., LB, **$94,780.** grading, paving 3.382 mi. State Rte. 181, FASP S 0896 (1) and SAP 1532 (5), Hart Co.;
Ga.—**Mose Gordon Lumber Co.**, Box 179, Commerce, Ga., LB, **$141,739.** grading, paving, 1 bridge 4.248 mi. State Rte. 172, FASP S 0989 (3) Madison Co.;
Ga.—**Foster & Creighton**, American National Bank Bldg., Nashville, Tenn., LB, **$1,260,481.** grading, paving, wid'n., reconstr. 4.932 mi. State Rtes. 85 and 1, FAP U 011-1 (5), & 174-1 (1) and F 074-1 (5) Muscogee Co.;
Ga.—**Ocmulgee Constr. Co.**, Box 38, McRae, Ga., LB, **$116,683**, grading, paving 11.071 mi. State Rte. 117, FASP S 0573 (6), Telfair and Dodge Counties;
Ga.—**T. D. Lamb, Jr.**, Box 271, Vidalia, Ga., LB, **$318,190** grading, paving 21.137 mi. State Rte. 16 FAP f 046-3 (2), Warren, Glasscock and Jefferson Counties;
Ga.—**Petty Bros., Inc.**, Hawkinsville, Ga., LB, **$109,353.** grading, paving 7.289 mi. State Rte. 68, FASP S 0688 (2), Washington Co.;
Ga.—**E. A. Hudson & Son**, Bolton, Ga., LB, **$336,043.** grading, paving 1 bridge 4.3 mi. State Rte. 74, FASP S 1044 (1), Ct. 1, Fulton Co.;
Ga.—**W. L. Cobb**, Box 410, Dectaur, Ga., LB, **$74,814.** grading, paving 2.721 mi. Jasper-Dahlonega Rd., State Rte. 108, FASP S 0857 (2), Pickens Co. Bids Aug. 19. CD 8/11.

BUILDINGS—LB & CA

▲ **J. A. Jones Constr. Co.**, 354 Aero Dr., Shreveport, La., LB **$3,193,000**, CORRECTIONAL INSTITUTE BLDGS., Proj. 0 7-ICI, DEQUINCY, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Aug. 23. CD 8/2.

Tudor Constr. Co., Box 1232, Alexandria, La., CA, **$681,181.** GENERAL HOSPITAL and INFIRMARY for Louisiana State Colony & Training School PINEVILLE, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids July 26, awarded Aug. 18. CD 8/2, under LB.

† **V. L. Nicholson Co.**, 611 S. Central St., Knoxville, Tenn., CA **$765,835** (6 bidders) constr. 7503 CELL and BLDG. 7503 in X-10 area, Inv. 401-56-1A, OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box E, Oak Ridge, Tenn. Bids Aug. 16. CD 7/8.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 8 Wisconsin

STREETS AND ROADS

September 7 Michigan September 8 Wisconsin
September 13 Ohio

BUILDINGS—BA

Wis., Neenah—MILL, etc.—BA 9/7—Bergstrom Paper Co., 225 E. Wisconsin Ave., 1 story, 280x280 ft. finishing mill and boiler house, $500,000. F. C. Shattuck, 174 E. North Ave., archt.

▲ **Ill., Joliet**—SCHOOL—BA 9/9—School District 81, 153 S. Ottawa St., East Side Junior High School, $1,735,000. Levon Seron, 81 N. Chicago St., archt. CD 2/15/54.

O., Dayton—SCHOOL—BA 9/13—Bd. Educ., 348 W. First St., Meadowdale Grade School, 4251 Thompson Dr., Harrison Twp. $650,000. Harti, Igleburger & Assoc., 531 Hulman Bldg., archts. CD 2/24/55.

▲ **Mich., Adrian**—HOSPITAL—BA 9/27—Emma L. Bixby Hospital Bd. Trustees, Gene D. Olson, pres., Adrian, 124-bed hospital, $1,500,000. Plans deposit $20 each for general constr. mech. and elec. Lewis J. Sarvis, 258 Champion St., Battle Creek, archt. CD 9/14/53.

HEAVY CONSTRUCTION—LB & CA

OHIO—State Hy. Dpt., Columbus, Zone 15,
Dandrea & Nardini Constr. Co., E. 21 St. and B. & O.

(Continued on page 96)

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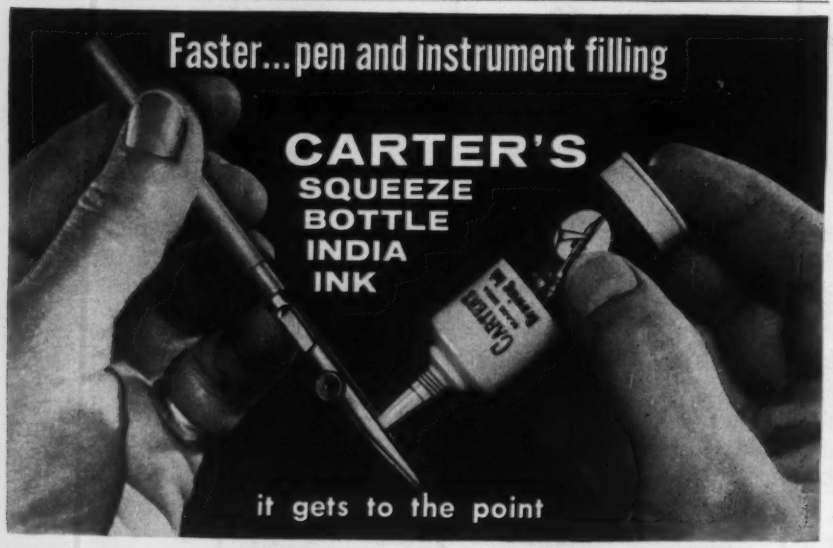

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(Continued from page 94)

RR Lorain, O., CA $619,547, est. $637,000 Type T-35 and structure 6.622 mi. S.R. 18, Sects. (24.17-24.65), 000, Huron and Lorain Counties. Bids Aug. 9. CD 8/17 under LB.

ILLINOIS—State Div. Hys., Springfield,
McMahan Constr. Co., Lucas and Wentzel Sts., Rochester, Ind., CA, $589,032. c. conc. base course, 2.09 mi. c. conc. base course wid'n. 9161 mi. Ill. No. 1, Crawford Co. Bids Apr. 1, awarded Aug. 10. CD 4/6, under LB.

ILLINOIS—State Div. Hys., Springfield,
McDougal-Hartmann Co., 1500 N. Adams St., Peoria, Ill., CA, $555,920. c. conc. paving, 3 span grade separation 3.07 mi. F. A. 14, Jackson Co. Bids Aug. 9, awarded Aug. 22. CD 8/15, under LB.

▲† James Burton Co., 300 W. Washington St., Chicago 6, Ill., CA, $1,234,380, Special AAA Facilities, C-54, Cook Co., ENG-11-032-55-47, ILLINOIS, U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Aug. 5. CD 7/29.

▲ Paschen Constr. Inc., 2739 N. Elston St., Chicago, Ill., CA, $664,670, addns., EVANSTON, ILL. City, City Hall, Evanston, Ill. Bids May 26, awarded Aug. 15. CD 6/22, under LB.
G. W. Falcon, 1506 Elmwood St., Evanston, Ill., CA, $365,707 marine work. ww. addns. (Evanston, Ill.)

WISCONSIN—State Hy. Comn., Madison,
Victor Nelson, 705 7 Ave. E., Superior, Wis., CA, $647,099. grading, ballast, base course 8.444 mi. Contract No. 1, U. S. Hy. 45, Mattek Corners-North County Line Road, Proj. F 09-2 (24), Langlade Co. Bids Aug. 2. CD 8/8, under LB.

▲ WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
Wis.—H. F. Radandt, Inc., 3110 Locust Lane, Eau Claire, Wis., LB, $91,927. Contract 1, structure and approaches 0.833 mi. S.T. Hy. 178, O'Neil Creek Bridge and Approaches, The Chippewa-Falls-Cornell Road, Proj. T 054 (4) Chippewa Co.;
Wis.—McLean-Astleford Co., 7701 Harriet Ave., Minneapolis, Minn., LB, $140,278. Contract 1, structure and approaches 0.867 mi. Locust Creek Bridge and Approaches, The Ellsworth-Elmwood Road, S.T. Hy. 72, Proj. S 075 (6), Pierce Co.;
Wis.—Waterways Eng. Corp., 1301 State St., Green Bay Wis., LB, $598,881. Contract 1, structure and approaches 0.159 mi. The Madison-Monroe St. Bridge and Approaches (City of Two Rivers) City St., Proj. US 6503 (1), Manitowoc Co. Bids Aug. 23. CD 8/5.

BUILDINGS—LB & CA

George A. Rutherford Co., 2725 Prospect Ave., Cleveland 15, O., CA Approx. $650,000, est. $500,000. (6 bidders) CENTRAL ENGINEERING SHOPS, W. 158 and Puritas Rd., CLEVELAND, O. Industrial Rayon Corp., Union Commerce Bldg., Cleveland 14, O. CD 8/12.

Fred W. Entenman, Inc., 3323 Secor Rd., Toledo 12, O. CA $653,700, (10 bidders) general constr., CHILDRENS HOME-RECEIVING HOME and 3 COTTAGES, Lucas County Childrens Home, MAUMEE, O. Comrs. Lucas Co., Court House, Toledo, O. Bids Aug. 9, awarded Aug. 16. CD 7/12.

▲ H. K. Ferguson Co., 1783 E. 11 St., Cleveland, O. CA. Total est. $9,000,000. 600,000 sq. ft. PARTS MFG. PLANT, SANDUSKY, O. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich., archt. CD 5/18, under CA.

▲ Harold J. Aronson, Builder, 2828 Euclid Ave., Cleveland 15, Ohio. CA Est. $3,500,000. design and construct 250 ranch HOMES in Glenwood Acres, off Richmond Rd., TWINSBURG, O. Porath Realty Co., Joseph Porath, pres., 2828 Euclid Ave., Cleveland 15, O. Awarded Aug. 16. CD 8/24.

▲ Huber & Hausmann, 1207 Cahoon Rd., Westlake, O. Own Forces. $1,000,000. 32 ranch homes on 23-acre site, Detroit and Cahoon Rds., WESTLAKE, O. Awarded Aug. 17.

Gray Realty Co., 16 Main St., Brownsburg, Ind., Owner Builds, $700,000. extension of HOMES in Prairie Village, BROWNSBURG, IND.

Hagerman Constr. Corp., 403 Strauss Bldg., Fort Wayne, Ind., CA Total est. $750,000, general contract, 2 story HOTEL, Road 324, between U. S. 27 and Road 427, FORT WAYNE, IND. Van Orman Northcrest Hotel Corp., c/o A. M. Strauss, Inc., archt.-engr., Strauss Bldg., Fort Wayne, Ind. CD 6/7/54;
Hipskind Heating & Plumbing Co., 1725 Winter St., Fort Wayne, Ind., CA, plumbing, heating, air-conditioning (Fort Wayne, Ind.);
Henry Electric Co., 602 W. State St., Fort Wayne, Ind., CA, electrical work (Fort Wayne, Ind.);
John Dehner Inc., 1206 Clark St., Fort Wayne, Ind., CA, parking area and road work (Fort Wayne, Ind.).

Lebrato Bros., 5224 S. Anthony St., Fort Wayne, Ind., and Spacemaker Homes, Inc., Baer Field, Fort Wayne, Ind., CA, $800,000, 80 HOMES in Allendale, between Fort Wayne and suburban Waynedale just off west side of Bluffton Rd. between Old Trail and Sandpoint Rds., FORT WAYNE, IND. Robert J. Allen, c/o Spacemaker Homes, Inc., Baer Field, Fort Wayne, Ind.

Banner Realty Co., 123 N. Alabama St., Indianapolis, Ind. Owner Builds, $500,000. HOMES in Soring Mill addn., INDIANAPOLIS, IND.

College Heights Realty Co., 11 and College Ave., Indianapolis, Ind. Owner Builds. $500,000. new section of HOMES, INDIANAPOLIS, IND.

Wright Bachman Lumber Co., Union Stockyards, Indianapolis, Ind. Owner Builds. $500,000. 50 HOMES in Villa Park, INDIANAPOLIS, IND.

A. W. Stackhouse, 2611 Winthrop Ave., Indianapolis, Ind., CA, $550,000. CLUBHOUSE, INDIANAPOLIS,

IND. Broadmoor Country Club, 2155 Keesler Blvd. W. Dr., INDIANAPOLIS, IND. CD 8/19.

▲ **J. J. Altman & Co.**, 1764 State St., East St. Louis, Ill., LB $2,383,000. general contract 2 story, brick, masonry, steel, rein.-con. HIGH SCHOOL, 51 and State Sts., EAST ST. LOUIS, ILL. Bd. Educ., School Dist. 189, St. Clair Co., 240 N. 6 St., East St. Louis, Ill. Bids Aug. 18, CD 7/26;
Maag Plumbing & Heating Co., 333 North Fifth St., East St. Louis, Ill., LB $738,686, plumbing and heating. (East St. Louis, Ill.);
Lowry Electric Co., 422 E. Broadway, East St. Louis, Ill., LB $362,947, electrical work (East St. Louis, Ill.).

Tudor Constr. Co., Stockland, Ill., CA, $842,271 Wm. Howard Taft, Thomas A. Edison and Mark Twain SCHOOLS, KANKAKEE, ILL. School District 111,240 Warren Ave., Kankakee, Ill. Bids July 27, awarded Aug. 16. CD 8/18, under LB.

▲ **Bd. Trustees, Alpena Hospital**, Alpena, Mich. rejected bids Aug. 9, 3 story HOSPITAL wing addn. ALPENA, MICH. LB $1,410,000. est. $1,095,000. CD 7/8.

▲ **V. Jarosz Co.**, 19250 James Couzens St., Detroit, Mich., CA $1,600,000. public WAREHOUSE, 10 acre site, Grand River Blvd., Chicago Ave., DETROIT, MICH. Norman Rom, 2263 Penobscot Bldg., Detroit, Mich.

Gateway Building Co., 410 N. Woodward St., Royal Oak, Mich., Owner Builds, $585,000. 45 brick veneer HOUSES, Thirteen Mile Rd. between Evergreen and Marais Sts ROYAL OAK, MICH.

▲ **Green & Sarko**, 28811 John R St., Royal Oak, Mich. CA Est. $1,400,000. 100 brick HOUSES, Green Acres subdivision, WARREN, MICH. Rose-Hill Realty Co., 17300 Grand River, Detroit, Mich.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 9 Norht Dakota — October 28 Missouri

STREETS AND ROADS

September 6 Iowa — September 8 Kansas, Nebraska — September 9 North Dakota

▲ **TEXAS**—BA 9/13—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1,
Dallas Co.—0.722 mi. Trinity River Bridge, Beckley Ave. grade separation and approach grading, from Hardwick St. in Dallas to East Levee of Trinity River in Dallas, Contr. No. D-FW 24. Plans deposit $25. Mitchell & Hunt, 206 San Pedro St., San Antonio, and O. R. McElya, 3901 San Jacinto St., Dallas, engrs. (Correction—bid date). CD 7/21.

▲ **TEXAS**—BA 9/14—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1,
Tarrant Co.—grading, drainage 10.22 mi. from 0.5 mi. west of Ederville Rd. to 0.3 mi. west of Duncan-Perry Rd., Contr. D-FW23. Plans deposit $25. Turnpike Engineers, 205 W. Main St., Arlington, engrs.; adv. ENR 9/1. (Correction—bid date). CD 7/21.

▲† **Kansas**—BA 9/20—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., outlet works, Stage II and No. 13 Hy. By-Pass, Tuttle Creek Dam and Reservoir, const. approach channel, intake tower and operating house upstream and downstream transition conduit connecting to existing conduit, constr. stilling basin and Hy. 13 By-Pass, at Manhattan, Riley Co., CIVENG-23-028-56-21. $7,500,000. CD 8/22.

BUILDINGS—BA

▲ **Tex., Beaumont**—HOSPITAL—BA 9/8—Baptist Hospital, c/o Bd. Trustees, Beaumont, hospital addn. $1,500,000. Extended date. Stone & Pitts, 1872 Calder St., archts-engrs. Landauer & Shafer, 4801 Lemmon St., Dallas, engrs. CD 8/22.

Tex., Weatherford—HIGH SCHOOL—BA 9/13—Weatherford Independent School Dist., Weatherford, high school. $750,000. Plans deposit $25. Wyatt C. Hedrick, T. & P. Passenger Station Bldg., Fort Worth, archt. CD 1/26.

BUILDINGS—SLC

▲ **Tex., Fort Worth**—OFFICE—Northwestern Security Life Insurance Co., 6816 Bankhead St., soon lets contract, 1 and 2 story brick, tile, masonry, air-conditioned office for Ridglea Area, 6300 block Camp Bowie Blvd. $1,000,000. J. H. Williams Co., 1407 S. Akard St., Dallas, archt. CD 4/8.

HEAVY CONSTRUCTION—LB & CA

▲ **Johnson, Drake & Piper**, Baker Bldg., Minneapolis, Minn., LB. $2,949,200 (5 bidders) general contract, 30,000 seat Baseball Stadium, BLOOMINGTON (P. O. Minneapolis,) MINN. Metropolitan Sports Area Comn., G. L. Moore, chn., 1750 Hennepin Ave., Minneapolis, Minn. Bids Aug. 23. CD 7/22;
T. D. Gustafson Co., 3206 Bloomington Ave., Minneapolis, Minn., LB, $159,800 (8 bidders) mechanical work (Bloomington, Minn.);
Sterling Electric Co., 33 South Fifth St., Minneapolis, Minn., LB $545,860. electrical work (Bloomington, Minn.).

† **Tobin Quarries**, 3804 Broadway, Kansas City, Mo., LB $543,007. constr., repair standard dikes and revetment, Missouri River, Lower Monona-Black Bird Bends, near Whiting, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 19. CD 8/10.

† **Costa Co.**, WOW Bldg., Omaha, Neb., CA $697,923 standard dikes and revetment, Missouri River Lower Monona-Upper Decatur Bends, near Whiting, Inv. 25-066-56-11, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 10. CD 8/16, under LB.

LaCrosse Dredging Co., 310 S. Michigan St., Chicago, Ill., CA $751,555. City Island Development incl. dredging, filling, etc. DUBUQUE, IOWA. City, City Hall, Dubuque, Iowa. Bids Aug. 9. CD 7/21.

Interstate Constr. Co., 3621 Troost Ave., Kansas City, Mo., CA, $873,270. rehabilitation of two 1 m.g. pre-sedimentation basins at water plant, North Kansas City, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Bids Aug. 22, awarded Aug. 23. CD 8/11.

▲ **KANSAS**—Kansas Turnpike Auth., P. O. Box 681, Topeka,
Kan.—**Kaw Paving Co., Inc.**, 1st and Topeka Blvd., Topeka, Kan., CA $1,939,229, b. conc. 11.11 mi. Shawnee Co.;
Kan.—**J. B. Michael Co., Inc.**, P. O. Box 5895, Memphis, Tenn., CA $1,425,408, b. conc. 8.47 mi. Osage and Shawnee Counties. Bids Aug. 19, awarded Aug. 22. CD 8/4.

† **C. L. Browning, Jr.**, Box 5008, Beacon Hill Sta., San Antonio, Tex., LB $854,227, ordnance storage area facilities, Abilene Air Force Base, ENG-41-443-56-4, ABILENE, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Aug. 8/16.

▲ **Pelphrey Basham, Inc.**, Electric Bldg., Fort Worth, Tex., LB $1,495,385, 42 in. line; LB $1,540,306, 45 in. line for water supply line, AMARILLO, TEX. City, City Hall, Amarillo, Tex. Bids Aug. 23. CD 7/27.

† **Lovering & Eickhof**, 59 W. Kellogg Blvd., St. Paul, Minn., LB $641,885, est. $585,290 (2 bidders) 1 story 5,100 sq. ft. masonry, steel base operations bldg. and control tower; 1 story masonry, steel, 9,300 sq. ft. crash and structural fire station at Air Force Base, ENG-45-164-56-4, GLASGOW, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Aug. 17. CD 7/25.

BUILDINGS—LB & CA

▲ **Southwest Ball Constr. Co.**, 1430 E. Houston St., San Antonio, Tex., LB, $4,748,922 general contract on both Thomas Jefferson HIGH SCHOOL and the George Washington HIGH SCHOOL, CEDAR RAPIDS, IOWA. Independent School Dist. 346 2 Ave. S.W., Cedar Rapids, Iowa. Bids Aug. 18, CD 8/16;
Natkin & Co., 4001 Leavenworth St., Omaha, Neb., LB $1,298,000 plumbing, heating and ventilating etc. (Cedar Rapids, Ia.);
Power Eng. Co., 544 Benson Bldg., Sioux City, Iowa, LB, $642,586, electrical work (Cedar Rapids, Iowa.).

Birchwood Builders, Inc., 1401 Franklin St., Iowa City, Iowa Owner Builds, $500,000 HOUSING, at Wise Addition, southwestern section of IOWA CITY, IOWA.

▲ **V. M. Jensen Co.**, Albert Lea, Minn., CA, Total est. $1,000,000. footings and foundation wall for DRUG

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B3

BUILT TO OUTLAST SEVERAL CHASSIS

PRODUCTION PLANT, IOWA CITY, IOWA. Procter & Gamble Co., Gwynne Bldg., Cincinnati, O. CD 4/13., International Steel Co., 1321 Edgar St., Evansville, Ind., CA fabrication and erection of structural steel (Iowa City, Iowa.).

Long Constr. Co., Rialto Bldg., Kansas City, Mo., LB 1 story OPERATIONS SUB-CENTER, 86th St. and Prospect Ave., KANSAS CITY, MO. Kansas City Power & Light Co., 14 and Baltimore Sts., Kansas City, Mo. Bids July 22. CD 3/8.

▲ George Moeller Constr. Co., 3007 Wyoming St., St. Louis 18, Mo., CA $2,129,000 10 story, bsmnt., brick, steel, rein.-con. RESIDENCE and INFIRMARY BLDG., incl. pent house, and 1 and 2 story wings, ST. LOUIS, MO. Masonic Grand Lodge of Missouri, c/o Lewis C. Robertson, supt. Masonic Home of Missouri, 5351 Delmar Blvd., St. Louis 12, Mo. Bids Aug. 11. CD 7/26.

▲† McCarthy Bros. Constr. Co., 4903 Delmar Blvd., St. Louis 8, Mo., CA $2,123,850, est. $2,000,000. 2 story, concrete block, 37,900 sq. ft. ADMINISTRATION BLDG., 1 story, concrete block 52,800 sq. ft. SERVICE BLDG. 1 story, concrete block 69,000 sq. ft. MAINTENANCE and STORES BLDG., 2,800 sq. ft. PAINT SHOP, WELDON SPRINGS, MO. Fruin-Colnon Contg. Co. & Utah Constr. Co. (Joint Venture) P. O. Box 522, St. Charles, Mo. Prime contractor for Atomic Energy Comn., Oak Ridge, Tenn. Bids Aug. 4. CD 8/17, under LB.

▲ A. Borchman & Sons, 4601 Douglas St., Omaha, Neb., LB $1,261,887, general constr., MEDICAL OFFICE BLDG., 44 and Farnam Sts., OMAHA, NEB. World Publishing Co., 14 and Dodge Sts., Omaha, Neb. Bids Aug. 2. CD 8/2;
Wray M. Scott Co., 2811 Dodge St., Omaha, Neb., LB $631,370, mechanical, (Omaha, Neb.).

Cowen Constr. Co., Shawnee, Okla., CA $706,000, est. $700,000. women's DORMITORY, SHAWNEE, OKLA. Oklahoma Baptist University, Shawnee, Okla. Bids July 19, awarded Aug. 10. CD 8/3 under LB.

Mr. & Mrs. N. W. Gehr, c/o James R. Clifford, Harlingen, Tex. Own Forces. $688,500. (C) 28 DWELLINGS; (F) 23 DWELLINGS, HARLINGEN, TEX. CD 11/23.

▲ Link Road Shopping Center, c/o Emma Levy, Shamrock-Hilton Hotel, Houston, Tex. Own Forces. $1,000,000. 150,000 sq. ft. Unit 1, SHOPPING CENTER, HOUSTON, TEX. CD 6/8.

Strickland & Beall, 1508 Fannin St., Houston, Tex. CA $700,000, (B) 26 DWELLINGS, (F) 41 DWELLINGS, near HOUSTON, TEX. Miles Strickland & Assocs., 1508 Fannin St., Houston, Tex. CD 8/27/54.

▲ Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., CA $3,750,000. 14 story APARTMENT, HOUSTON, TEX. Dan M. Moody, Abstract & Title Bldg., and Howard Tellepsen, 1710 Telephone Rd., Houston, Tex. CD 8/19.

C. O. Beeler Interests, 4715 Calhoun St., Houston, Tex. CA $510,000. Job 4, 51 DWELLINGS, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, Beeler Lumber Co., 4715 Calhoun St., Houston, Tex. CD 6/6.

Haggerty-Messmer Constr., Bozeman, Mont., CA, $574,266, general contract STUDENT UNION addn., Montana State College, BOZEMAN, MONT. State Bd. Educ., Helena, Mont. Bids Aug. 17. CD 7/20.

▲ Dravo Corp., Neville Island, Pittsburgh, Pa., CA $1,575,000. TRONA PLANT EXPANSION, GREEN RIVER, WYO. Westvaco Chemical Co., Div. Food Machinery & Chemical Corp., Fisher Bldg., Detroit, Mich. CD 6/5/51.

† Hoeppner Constr. Co., Wichita Falls, Tex., LB, $511,459, main post EXCHANGE, Inv. 25-066-56-4, CAMP CARSON, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 16. CW 7/20.

▲ W. R. Grimshaw Constr. Co., Kome Bldg., Tulsa, Okla., CA $12,000,000. 650,000 sq. ft. SHOPPING CENTER, incl. 62 stores and shops, off-street parking, near Lakeside Amusement Park, near DENVER, COLO. Markets, Inc., 2333 South Sherman St., Denver, Colo. W. W. Ahlschlager Jr. & Assocs. 2505 Turtle Creek Blvd., Dallas, Tex., engrs. CD 9/28.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 13 Idaho, Washington

STREETS AND ROADS

September 13 Idaho, Washington
September 21, 22 California

Calif., San Diego—BA 10/5—City, Civic Center dredging San Diego Bay vicinity of 10 Ave. Marine Terminal. $500,000. Extended date. CD 8/23.

Calif., San Diego—QUAY WALL—BA 10/5—City, Civic Center, Cyclopean concrete quay wall, 10 Ave. Marine Terminal, $500,000. Alden K. Fogg, city engr. CD 4/25.

BUILDINGS—BA

▲ Calif., Richmond — SCHOOL — BA 9/12 — Richmond Union High School Dist., 1108 Bissell Ave., E. M. Downer Junior High School, $2,000,000. Plans deposit $30. D. Hardison & Assoc., 225 Broadway, archts. Hall, Pregnoff & Matheu, 251 Kearny St., San Francisco, engrs. CD 6/3/54.

BUILDINGS—SLC

▲ Calif., San Francisco — FLOWER TERMINAL — San Francisco Flower Growers Assn., Calif. Flower Market, Inc., c/o Marion J. Ciampi, archt., 425 Bush St., soon lets contract 113,950 sq. ft. flower terminal bldg. $1,000,000. Ellison, Sedgwick & Assocs., 1045 Sansome St., engrs.

▲ Utah, Salt Lake City—OFFICE—Zion's Security Corp., L. Pierce Brady, mgr. Union Pacific Annex Bldg., soon lets contract 8-story office. $1,000,000. Ashton, Evans & Brazier, 24 S. W. Temple St., archts. CD 6/17.

HEAVY CONSTRUCTION—LB & CA

WASHINGTON—State Hy. Comn., Olympia,
R. A. Heintz Constr. Co., 211 N.E. Columbia Blvd., Portland, Ore., CA $923,063. clearing, draining, grading, paving 3.37 mi. State Hy. 8, Fisher Rd. to Camas and constr. 2 rein.-con. bridges, F.A.P. F-014-1 (3) Clark Co. Bids Aug. 16. CD 8/22, under LB.

▲ OREGON—State Hy. Comn., Highway Bldg., Salem,
Rogers Constr., Inc. 11760 N.E. Glisan St., Portland, Ore., CA $844,001 (13 bidders) grading 2.62 mi., paving 2.03 mi. Columbia River Hy., FAP BF-221 (4), Clatsop So.; CA $237,504 (6 bidders) grading, paving 2.41 mi. Tualatin Valley Hy., Washington Co. Bids Aug. 11. CD 8/3.

OREGON—State Hy. Comn., Highway Bldg., Salem,
Ore.—General Constr. Co., 4850 .W. Front St., Portland, Ore., CA $881,706 (7 bidders) Clay St.-Columbia St. traffic interchange Pacific Hy. West, Portland, FAP U-306 (13), Multnomah Co.;

Ore.—Calkins Crushing Co., Oceanlake, Ore. CA $90,324 (2 bidders) grading, surf. 3.03 mi. Oregon Coast Hy. FAP S-221 (1), Curry and Coos Counties. Bids Aug. 12. CD 8/3.

Steve P. Rados, 112 W. Maple St., Monrovia, Calif., LB $683,156. (9 bidders) Proj. 76, Cabrillo Ave. storm drain and Unit No. 1, (Proj. 76) 212 St. Storm drain, Torrance, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Aug. 19. CD 8/5.

BUILDINGS—LB & CA

▲ Macomber Brunzell Co., 8818 Melrose Ave., Los Angeles, Calif., CA, $3,500,000. 250-room HOTEL, incl. CASINO and THEATER, RENO, NEV. Comstock Hotel Corp., c/o contractor.

Reno School Dist., 139 W. 6 St., Reno, Nev., rejected bids Aug. 16, Otis Vaughan Intermediate SCHOOL, RENO, NEV. LB $941,000. CD 7/5.

M C K, Inc., Box 2274, Auburn, Wash., Day Labor, $547,750, 43 HOUSES on 8 Ave. S. in 31000 block, AUBURN, WASH.

▲ L. H. Hoffman Co., 715 S.W. Columbia St., Portland, Ore., CA Est. $10,000,000. Total est. $20,000,000 for construction sulphate PULP MILL, COSMOPOLIS, WASH. Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma 2, Wash. CD 6/14.

D. B. Harmon, Richmond Beach, Wash., Day Labor, $600,000. 53 HOUSES, Harmony Lake, RICHMOND BEACH, WASH.

▲ Glendale Homes, Inc., 1000 S. 112 St., Seattle, Wash., Day Labor, $6,000,000, 300 HOMES on property now occupied by Glendale Country Club, SEATTLE, WASH.

Ross B. Hammond Co., Hillsboro, Ore., LB $771,690 (7 bidders) EDUCATION UNIT and PARLOR SECT. of church, PORTLAND, ORE. First Methodist Church, 1215 S.W. Taylor St., Portland, Ore. Bids Aug. 16. CD 8/4.

The Ruane Corp., 8415 Las Tunas Dr., San Gabriel, Calif., CA, $589,000. 1 and part 2 story, rein.-con. OFFICE addn., 126 N. Maryland Ave., GLENDALE, CALIF. Southern California Gas Co., 810 S. Flower St., Los Angeles, Calif. Bids Apr. 7, awarded Aug. 19.

Brandon Constr. Co., Box 375, Hayward, Calif., Owner Builds, $606,900. 82 HOME subdivision, Tract 1473, HAYWARD, CALIF.

Beckner Constr. Co., 2650 River Ave., South San Gabriel, Calif., CA, $834,782 Wilson High SCHOOL addns., LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Aug. 4, awarded Aug. 19. CD 8/9, under LB.

▲ Los Angeles Co., Hall of Records, Los Angeles, Calif., cancelled bids to have been opened Aug. 31, JUVENILE HALL UNIT, Rancho Los Amigos Hospital, Hondo, LOS ANGELES, CALIF. Est. $2,400,000. CD 8/5.

Valley Estates, 6338 Wilshire Blvd., Los Angeles, Calif., Owner Builds, $831,600. 77 frame, stucco DWELLINGS, Academy, Avalon Aves., etc., POMONA, CALIF.

Clayton Homes, 478 San Vicente Blvd., Los Angeles, Calif. Owner Builds. $618,000. 72 frame, stucco DWELLINGS, NANTES St., and Ivanell Ave., PUENTE, CALIF.

▲ MacDonald, Young & Nelson, 351 California St., San Francisco, Calif., LB, $3,500,000. 1 to 3 story, 190,000 sq. ft. OFFICE, off-street parking, cafeteria, etc., SAN FRANCISCO, CALIF. Firemans Fund Insurance Co., 401 California St., San Francisco, Calif. Bids Aug. 11. CD 8/4.

▲ James I. Barnes Constr. Co., 940 Spring St., Redwood City, Calif., LB, $3,037,000 (5 bidders) combined structure, Unit 1, University of California MEDICAL CENTER, SAN FRANCISCO, CALIF. University of California, Medical Center, c/o Engineer, 1379 3 Ave., San Francisco, Calif. Milton T. Pflueger, 580 Market St., San Francisco, Calif., archt. Huber Knapik, 1 Montgomery St., San Francisco, Calif., engr.

▲ Kelso Constr. Co., 2814 Lafayette St., Newport Beach Calif., CA, $1,035,000. 90 frame, stucco DWELLINGS, Adrian Way, Fairview St., etc., SANTA ANA, CALIF. Fairview Terrace Homes, 620 Vance St., Santa Ana, Calif.

Mortex Constr. Co., 7700 Sunset Blvd., Los Angeles, Calif. Owner Builds, $803,400. 72 frame, stucco DWELLINGS, Goodhue St., Archway Dr., Meta Dr. WHITTIER, CALIF. Mortex Constr. Co., 7700 Sunset Blvd., Los Angeles, Calif. Hudson & Brockow, 2824 W. Olympic Blvd., Los Angeles, Calif., archts.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

September 6, British Columbia

Sask., Regina—TOWERS—BA 9/15—Saskatchewan Govt. Telephones, Regina, supplying, erecting 21 galvanized steel towers for use as microwave relay stations. $750,000. Plans deposit $35. Stock, Ramsay & Assocs., 2041 Hamilton St., archts. Wallace Carruthers & Assocs., 35 Isabella St., Toronto, Ont., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ ALBERTA—Federal Govt., Ottawa, Ont.,
Alta.—Square M Constr. Ltd., 10325 61 Ave., Edmonton, Alta., LB, $1,177,630. grading, placing culverts, base course on Trans-Canada Hy., Banff National Park;
Alta.—Standard Gravel & Surfacing of Canada Ltd., 5340 1 St. S.W., Calgary, Alta., LB, $216,620. grav. subbase Baff Jasper Highway, Banff National Park;
Alta.—New West Constr. Co. Ltd., 10480 113 St., Edmonton, Alta., LB, $600,130. grading, culverts, base course on Minnewanka-Banff entrance road to Banff National Park, grading, culverts, base course, CPR diversion Mile 0, Mile 10.8 Trans-Canada Hy., Banff National Park. Bids Aug. 17. CD 8/12.

▲ Dawson, Wade & Co. Ltd., 775 Clark Dr., Vancouver, B. C., and Macco Corp., 14409 Paramount Blvd., Paramount, Calif., U. S. A., CA, $4,921,875, Upper Campbell Lake dam, in connection with Ladore Falls and John Hart Hydro-electric development BRITISH COLUMBIA, British Columbia Power Comn., P.O. Box 500, Victoria, B. C. Bids Aug. 4, awarded Aug. 17. CD 8/10, under LB.

BRITISH COLUMBIA—Dpt. P. Wks., Ottawa, Ont.,
General Constr. Co. Ltd., Granville Island, Vancouver, B. C., CA, $838,132, grav. base, etc. 5 mi. Hy. T. C. Hy. Mile 16 to Mile 21, Yoho National Park. CD 6/30, under LB.

ONTARIO—Dpt. Hys. Parliament Bldg., Toronto,
Hi-Way Constr. Ltd., Norfolk St. S., Simcoe, CA, $679,274, Contract 55-157 grading, culverts, gran. base, hot mix paving 8.3 mi. Hy. No. 3, from Eagle to the Kent Co. line. Awarded Aug. 19. CD 8/24, under LB.

BUILDINGS—LB & CA

▲ Dawson & Hall Ltd., 775 Clark St., Vancouver, B. C., CA, $7,407,000 (5 bidders) 504-bed, concrete, rein.-con. ACUTE and EMERGENCY and LAUNDRY SECTION, VANCOUVER, B. C. Vancouver General Hospital, 12 and Heather Sts. Vancouver, B. C. Bids Aug. 9. CD 5/18.

▲ Tower Investment Corp., Ltd., 825 Eglinton Ave. W., Toronto, Ont., Owner Builds, $1,000,000, 9 story, penthouse, 60x109 ft., steel, brick APARTMENT, TORONTO, ONT. W. Shulman, 1173 Bay St., Toronto, Ont., archt.

Eastern Constr. Co. Ltd., Box 96, Windsor, Ont., CA, $700,000. PLANT PERSONNEL BLDG., and HOSPITAL addn., WINDSOR, ONT. Chrysler Corp. of Canada Ltd., 2450 Chrysler Center, Windsor, Ont. W. R. Souter & Assocs., 36 James St. S., Hamilton, Ont., archts. CD 11/18/53.

▲ Hillsdale Constr. Co. Ltd., 5950 Cote des Neiges Rd., Montreal, Que., CA $5,000,000. 500-600-unit HOUSING program, CHAMBLY, QUE. New Transsylvania Co. Ltd., 3201 Forest Hill Ave., Montreal, Que. Emilien Bujold, 6746 Molson St., Montreal, Que., archt.

▲ Anglin-Norcross (Quebec) Ltd., 892 Sherbrooke St. W., Montreal, Que., CA, $1,200,000. (6 bidders) superstructure for 8 story, 84x178 ft., concrete OFFICE BLDG., University and Belmont Sts., MONTREAL, QUE. Canadian Overseas Telecommunication Corp., 211 St. Sacrement St., Montreal, Que. Bids Aug. 1, awarded Aug. 19. CD 7/12.

Claude Legait Constr. Ltd., 1819 Glendale Ave., Montreal, Que. Owner Builds, $500,000. 55 unit HOUSING program, Alfred St., MONTREAL, QUE. Allen Yentin, 4710 Decarie Blvd., Montreal, Que., archt.

Foundation Co. of Canada, Ltd., 1900 Sherbrooke St. W., Montreal, Que., CA, $600,000, 1 story, 85,000 sq. ft., steel frame, WAREHOUSE, MONTREAL, QUE. Continental Can Co. of Canada Ltd., 3455 Cote de Liesse Rd., Montreal, Que. Awarded Aug. 16.

AMERICANS ABROAD

BUILDINGS—BA

Hong Kong—OFFICE—BA 11/8—The Administrative Officer, United States Consulate General, corner of Garden and Lower Albert Rds., Hong Kong, 5 story, bsmnt., approx. 70,000 sq. ft. rein.-con., masonry, masonry veneer exterior, air-conditioned U. S. Consulate Office Bldg. Wurster, Bernardi & Emmons, 202 Green St., San Francisco 11, Calif., U. S. A., archts.

HEAVY CONSTRUCTION—LB & CA

▲† Johnson, Drake & Piper International Corp., 111 4 Ave., New York, N. Y., U.S.A. and Merritt-Chapman & Scott Corp., 260 Madison Ave., N. Y., U.S.A. CA, $11,000,000. radar bases, NEWFOUNDLAND and LABRADOR. U. S. Eng., Eastern Ocean Dist., 346 Broadway, New York, N. Y., U.S.A.

(Proposal Advertisements see pp. 109 to 113)

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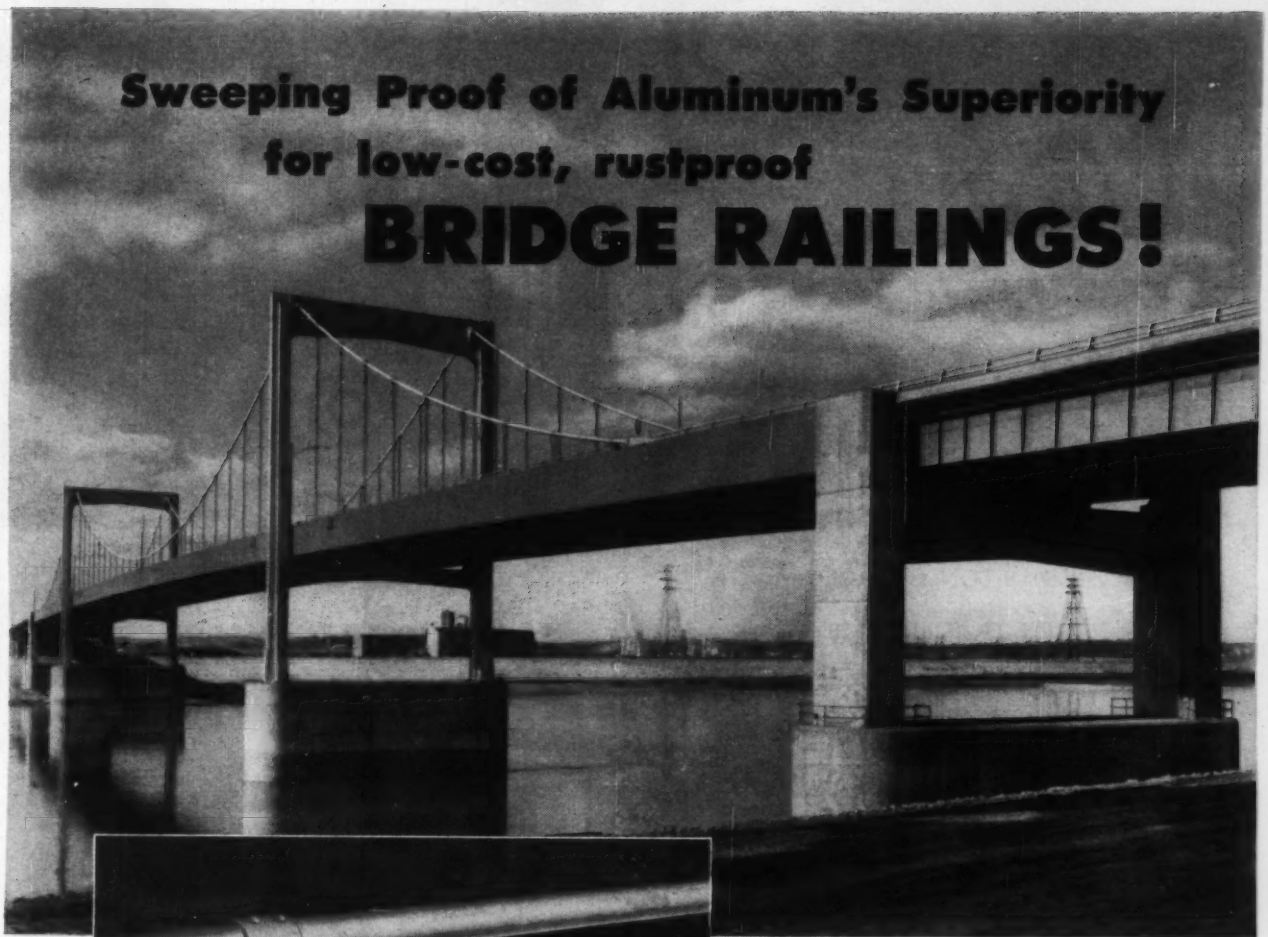

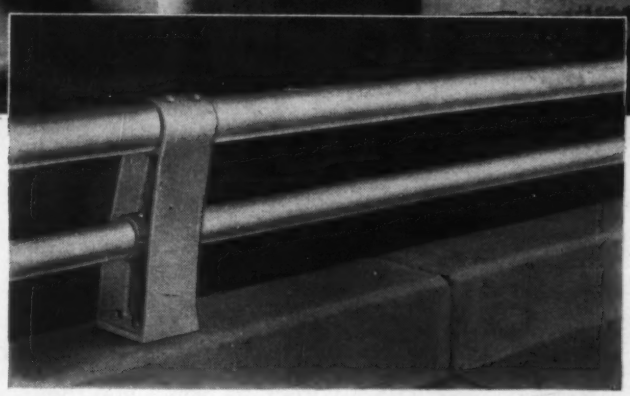

Reynolds Aluminum Guard Rails on Paseo Trafficway between North Kansas City and Kansas City, Missouri.

Engineers:
Howard, Needles, Tammen and Bergendoff, Kansas City.

Bridge Superstructure and Erection of Railings:
American Bridge Company.

Fabricators:
Southwest Ornamental Iron Company, Kansas City.

Reynolds Aluminum adds its advantages of maintenance-free beauty and low cost to still another modern bridge design. These double rails of rustproof Reynolds Aluminum pipe are anchored to cast aluminum posts for an installation of exceptional durability.

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For quick reference, see catalog $\frac{5a}{Re}$ *in Sweet's Architectural File.*

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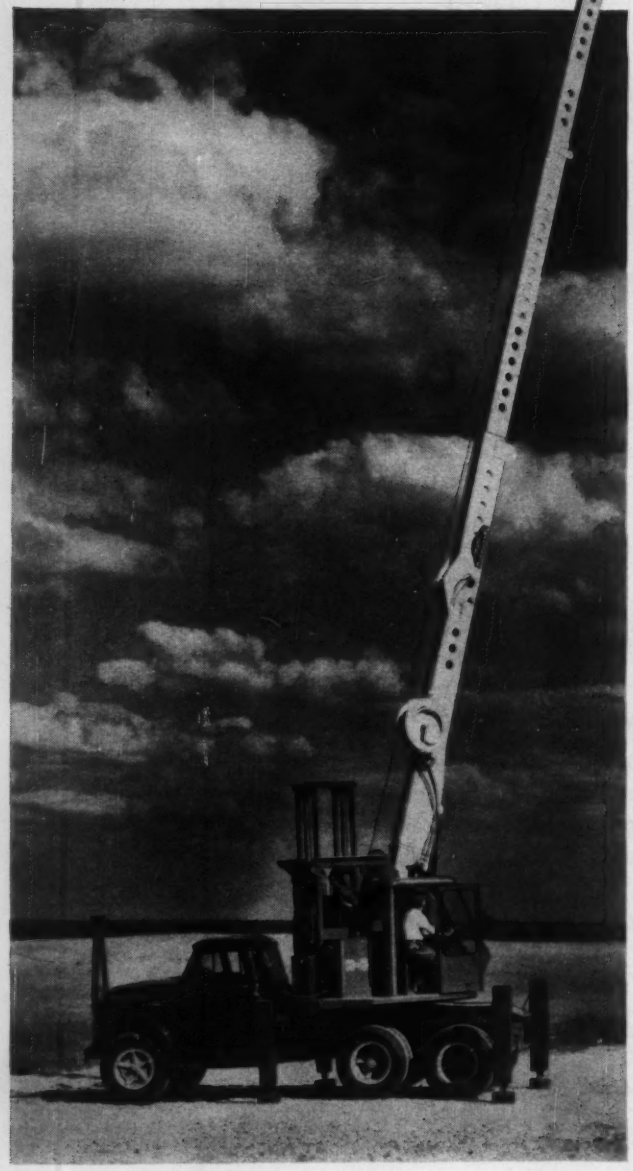
★ ½-YD., 9-TON CAPACITY

★ 50-MPH TRAVEL SPEED



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Send me your new H-5 Bulletin. This crane interests me for .....work.
(type of job)

★ *Name* .....
★ *Company* .....
★ *Title* .....
★ *Address* .....
★ *City* .....
★ *State* .....

110H55C

BUCYRUS ERIE HYDROCRANE

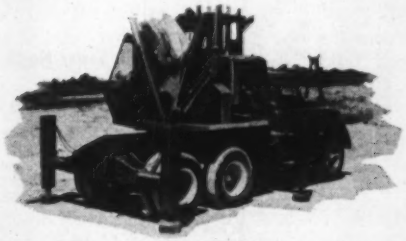
Mounts on Conventional Truck

50-Ft. Boom Telescopes to Half Length For Travel . . . . .

High-lift, 3-piece boom (extra equipment at added cost) gives you 50 feet of reach, retracts to 25 feet for traveling. When machine arrives at job site, boom and hydraulic fittings can be connected and machine working in less than 10 minutes.

Both the 2-piece standard boom and 3-piece erector's boom extend and retract 12 feet — hydraulically. You can change boom length *while you're working* — move a load in and out of buildings or close quarters without moving crane an inch.

All-Hydraulic Action Means Precision Control . . . .



Every crane function is fully hydraulic — boom and line hoist, swing, outrigger set and retract, boom telescope, bucket open and close. Control is so precise loads can be inched into place when necessary, yet line speed is up to 240 fpm.

The H-5 Hydrocrane's combination of 18,000 lb. maximum lift, 50-ft. boom plus 20-ft. jib, and 50-mph top travel speed opens greatly expanded job opportunities — particularly when all these features are packed into a unit that can meet highway laws for over-all length and axle loads (depending upon truck selection.)

1880-1955

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

75 Years of Service
to Men Who Shape the Earth

See It In Action

Find out what the new H-5 Hydrocrane can do for you. Ask your Bucyrus-Erie distributor about a demonstration.

BIG HEAD START ON DEADLINE WITH FOSTER RENTAL STEEL—SHEET PILING

Checking Foundations with 120-Ton Load on H-Bearing Frames Anchored to Foster Piling

Hotel - Department Store - Parking Facility
THE DENVER COLORADO PROJECT

Contractors Webb & Knapp got a *Head Start* on this gigantic project by calling Foster for rental steel-sheet Piling, to complete four sumps (that were holding up the major excavation of this 400-foot square foundation). Foster delivered *on time*, the exact sections and exact lengths of steel-sheet Piling needed to get a head start on work schedules.

Foster 12"x 53 lb. H-Bearing Piles driven an average depth of 50 feet, around perimeter of the gigantic 400 foot excavation.

Whatever You Need in Piling Call L. B. FOSTER for Service

• STEEL-SHEET PILING • H-BEARING PILES
• LIGHTWEIGHT PILING
• PIPE PILES

FASTER from FOSTER

Write for Catalogs EP-9

RAILS • TRACK EQUIPMENT • PIPE • FABRICATION

L.B. FOSTER co.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
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UNIT PRICES

Tampa Extends Sewers to Areas Recently Annexed

As part of its $7.9-million sewerage program, Tampa, Florida has let four contracts for trunk and intercepting sewers and force mains that total $502,247. Greeley & Hansen, Chicago, are consultants. The Bayshore intercepting sewer follows shore line with cuts up to ten ft below msl. All divisions require extensive use of well point equipment. Minimum wages include: laborers $1.175 and carpenters $2.40. Bidders include:

Bayshore Intercepting Sewer

1C C. T. Dawkins, Tampa, Fla.	$213,297
2 Cone Bros. Contracting Co., Tampa, Fla.	226,388
3 Sullivan, Long & Hagerty, Bessemer, Ala.	302,716

Bids: 6-30-55 Items	Unit	Quantity	Unit Prices 1C	2
Excav, addl earth	cy	300	$1.00	$0.50
Rock	cy	800	0.91	0.50
Rock, crushed	cy	1,200	4.00	6.00
Sand, washed	cy	200	1.00	4.00
Pit run	cy	200	0.50	0.50
Sheeting, wood	Mbm	5	30.00	1.00
Steel	lb	5,000	0.03	0.01
Concrete, Cl C	cy	5	30.00	30.00
Cl D	cy	50	30.00	30.00
Steel, addl reinforcing	lb	1,000	0.04	0.01
Iron castings	lb	14,000	0.12	0.10
Brick masonry, addl	cy	5	50.00	1.00
Plank foundations	Mbm	2	80.00	1.00
Wood piles	lf	200	0.10	0.10
Superstructure	Mbm	2	50.00	1.00
Curb replacement	lf	300	1.00	1.00
Conc curb & gutter repl	lf	10	2.25	2.00
Conc sidewalk repl	sy	20	3.00	3.50
Brick pavement repl	sy	10	2.50	2.20
Asph conc pave repl	sy	10	2.00	1.50
Shell pavement repl	sy	10	1.25	1.30
Shell base repl	sy	620	1.10	1.20
Surf treatment, single	sy	10	0.50	0.40
double	sy	10	1.00	0.50
Asph cold mix pave repl	sy	550	2.00	1.30
Conc pavement repl	sy	10	6.00	10.00
RC pipe, 30"	lf	3,085	25.90	26.00
27"	lf	4,080	20.00	22.00
VC pipe, 21"	lf	1,525	14.32	19.00
Manhole bases, 4' ϕ	ea	32	180.00	100.00
Manhole barrel, 4' ϕ	lf	370	17.50	25.00
Manhole drop	lf	230	12.30	7.00
VCP house conn, 6"	lf	70	2.00	2.00
Emergency overflow	ls	job	2,917	1,441

Force Mains, Bayshore, Euclid, Knights, Swann, Neptune and Dale Mabry

1C C. T. Dawkins, Tampa, Fla.	$23,313
2 Stansfield Construction Co., Inc., Tampa, Fla.	25,173

Excav, addl earth	cy	50	$1.00	$0.10
Rock	cy	10	10.00	0.25
Rock, crushed	cy	20	8.00	5.00
Sand, washed	cy	10	1.00	0.25
pit run	cy	10	0.50	0.25
Sheeting, wood	Mbm	2	30.00	100.00
Steel	lb	1,000	0.02	0.07
Concrete, Cl C	cy	5	30.00	50.00
Cl D	cy	10	30.00	50.00
Steel, addl reinforcing	lb	500	0.04	0.10
Iron castings	lb	100	0.12	0.08
Brick masonry, addl	cy	5	50.00	10.00
Plank foundations	Mbm	2	80.00	100.00
Wood piles	lf	100	0.10	1.00
Superstructure	Mbm	2	50.00	100.00
Curb replacement	lf	50	1.00	2.50
Conc curb & gutter repl	lf	10	2.25	3.00
Conc sidewalk repl	sy	10	3.00	4.00
Brick pavement repl	sy	10	2.50	4.50
Asph conc pave repl	sy	10	2.00	4.50
Shell pave repl	sy	150	1.25	2.50
Shell base repl	sy	270	1.10	2.50
Surface treat, single	sy	10	0.50	1.50
double	sy	10	1.00	1.50
Asph cold mix pave repl	sy	200	2.00	3.00
Conc pave repl	sy	30	10.00	7.50
Cl pipe, 18"	lf	535	12.00	13.50
8"	lf	460	8.26	7.75
8"	lf	25	22.00	75.00
6"	lf	355	4.50	6.00
6"	lf	355	9.18	6.50
6"	lf	370	6.18	4.25
16"	lf	220	11.62	11.00
Conc supporting piers	ls	job	90.00	150.00

Ballast Point Trunk Sewer

1C Cone Bros Contracting Co., Tampa, Fla.	$117,547*
2 C. T. Dawkins, Tampa, Fla.	122,413
4 Sullivan, Long & Hagerty, Bessemer & Brmhm, Ala.	169,514

Bids: 6-30-55	Unit	Quantity	Unit Prices 1C	2
Excav, addl earth	cy	350	$0.50	$1.00
Rock	cy	100	0.50	0.01
Rock, crushed	cy	350	6.00	4.00
Sand, washed	cy	50	4.00	1.00
Pit run	cy	50	0.50	0.50
Sheeting, wood	Mbm	5	1.00	30.00
Steel	lb	5,000	0.01	0.03
Concrete, Cl C	cy	10	30.00	30.00
Cl D	cy	50	30.00	30.00
Steel, add reinf	lb	1,000	0.01	0.04
Iron castings	lb	10,800	0.10	0.12
Brick masonry, additional	cy	5	1.00	50.00
Plank foundations	Mbm	2	1.00	80.00
Wood piles	lf	200	0.10	0.10
Superstructure	Mbm	2	1.00	50.00
Curb replacement	lf	10	1.00	1.00
Conc curb & gutter repl	lf	10	2.00	2.25
Conc sidewalk repl	sy	10	3.50	3.00
Brick pavement repl	sy	1,000	2.40	2.50
Asph conc pavement repl	sy	1,500	1.50	2.00
Shell pavement repl	sy	1,500	1.30	1.25
Shell base repl	sy	2,800	1.20	1.10
Surface treatment, single	sy	20	0.50	0.50
Double	sy	30	0.70	1.00
Asph cold mix pave repl	sy	40	1.30	2.00
Conc pavement repl	sy	10	10.00	6.00
VC Pipe, 18"	lf	1,970	13.00	13.70
15"	lf	1,120	16.00	19.61
15"	lf	1,355	13.00	14.17
15"	lf	1,995	11.00	8.80
12"	lf	675	7.00	5.83
Manhole bases, 4' ϕ	ea	25	83.00	100.00
Manhole barrel, 4' ϕ	lf	200	25.00	17.50
Manhole drop	lf	50	7.00	15.00
Riser bases & head, 18"	ea	10	37.00	45.00
15"	ea	60	25.00	40.00
12"	ea	5	17.00	30.00
Riser barrel	lf	300	4.00	6.00
VC wyes, 18 x 6"	ea	20	12.00	30.00
12 x 6"	ea	15	4.00	10.00
VCP house connec, 6"	lf	2,800	1.20	1.50

Manhattan Trunk Sewer North

1 C. T. Dawkins, Tampa, Fla.	$150,585
2C Cone Bros Contracting Co., Tampa, Fla.	154,103*

Bids: 6-30-55 Items	Unit	Quantity	Unit Prices 1	2C*
Excav, addl earth	cy	200	$1.00	$0.50
Rock	cy	400	0.01	4.00
Rock, crushed	cy	500	8.00	6.00
Sand, washed	cy	100	1.00	4.00
Pit run	cy	100	0.50	0.50
Sheeting, wood	Mbm	5	30.00	1.00
Steel	lb	5,000	0.03	0.01
Concrete, Cl C	cy	10	30.00	30.00
Cl D	cy	50	30.00	30.00
Steel, addl reinforcing	lb	1,000	0.04	0.01
Iron castings	lb	12,000	0.12	0.10
Brick masonry, addl	cy	5	50.00	1.00
Plank foundations	Mbm	2	80.00	1.00
Wood piles	lf	200	0.10	0.10
Superstructure	Mbm	2	50.00	1.00
Curb replacement	lf	80	1.00	1.00
Conc curb & gutter repl	lf	10	2.25	2.00
Conc sidewalk repl	sy	10	3.00	3.50
Brick pave repl	sy	30	2.50	2.50
Asph conc pave repl	sy	30	2.00	2.50
Shell pavement repl	sy	1,300	1.25	1.30
Shell base repl	sy	1,520	1.10	1.10
Surface treat, single	sy	400	0.50	0.50
double	sy	50	1.00	0.70
Asph cold mix pave repl	sy	1,000	2.00	1.30
Conc pavement repl	sy	10	6.00	10.00
RCP, 30"	lf	35	33.00	29.00
27"	lf	780	21.73	21.00
27"	lf	2,340	19.20	20.00
VCP 24"	lf	1,020	18.25	21.50
24"	lf	1,825	18.00	19.00
21"	lf	615	10.56	11.00
Manhole bases, 4' ϕ	ea	28	180.00	80.00
Manhole barrel, 4 ϕ	lf	280	17.50	25.00
Manhole drop	lf	40	15.00	7.00
Riser bases & head, 24"	ea	20	110.00	52.00
Riser barrel	lf	40	6.00	4.00
VC wyes, 21 x 6"	ea	10	45.00	21.00
VCP house connec, 6"	lf	1,150	1.50	1.20
Emergency overflow	ls	job	100.00	702.00

* Awarded in combination for $265,638.
Completion time = 270-300 calendar days.

Highway Income and Expenditures—1954-1955

Type of Income	1954 Preliminary Estimate	1955 Forecast
From federal sources	$ 675,000,000	$ 771,000,000
Highway-user imposts	3,220,000,000	3,344,000,000
Toll receipts	228,000,000	253,000,000
Property taxes and gen. revenues	1,187,000,000	1,243,000,000
Miscellaneous	142,000,000	160,000,000
Total revenues	**$5,452,000,000**	**$5,771,000,000**
Bond issue proceeds	2,761,000,000	1,563,000,000
Grand Total—Income	**$8,213,000,000**	**$7,334,000,000**
Type of Expenditure		
Capital outlays	$3,981,000,000	$4,625,000,000
Maintenance	1,793,000,000	1,848,000,000
Administration	303,000,000	316,000,000
Highway police	121,000,000	125,000,000
Interest	221,000,000	261,000,000
Total direct expenditures	**$6,419,000,000**	**$7,175,000,000**
Obligations retired	357,000,000	377,000,000
Grand Total—Expenditures	**$6,776,000,000**	**$7,552,000,000**

Source: Bureau of Public Roads

Highway Spending Will Be Bigger Than Income This Year

In 1955, for the first time since World War II, government at every level will spend more on highways than it takes in for highway purposes.

In other words, government will be drawing down the backlog of funds accumulated during 1954 and 1953, when receipts ran well ahead of spending. That was due to huge revenue bond issues for toll roads, where it is customary for the entire project to be financed at one time. Highway income would still be running ahead of highway spending, were it not that very few toll issues have been sold this year.

According to the annual forecast by the Bureau of Public Roads (table, above), governments will take in $7,334 million for highways, and spend a new high of $7,552 million. BPR estimates that about $1.6 billion in highway bonds will be issued this year, about half of which will be turnpike revenue bonds. Last year highway bonds reached a peak of $2.8 billion, of which $2.2 billion were revenue bonds for toll roads.

An estimate of $800 million for toll-road issues this year might even turn out to be a little too generous. BPR, of course, knows no better than anyone else just how money-market conditions will be for the rest of the year and how anxious borrowers will be to get their issues out fast. So far this year, less than $200 million in toll bonds have been sold. There are several strong possibilities that might bring the total to over $1 billion. But on the other hand it is quite likely that some of these issues might be postponed or delayed by lawsuits.

• **Income**—However, BPR predicts that other sources of income for highways will reach a new high of almost $5.8 billion in 1955, more than $300 million above 1954. State highway-user imposts will rise from $3.2 billion last year to about $3.3 billion. All the other sources of revenue—federal funds, toll revenues, and county and local governments (mainly from property taxes)—are expected to increase in 1955 and during the next few years. But it's safe to predict that the biggest percentage increases will be in federal funds and in toll receipts.

• **Outgo**—Though all types of highway spending are up this year, the biggest increase both in dollar terms and percentage-wise will be in capital outlay. This will reach a new high of $4.6 billion—$600 million ahead of 1954.

Spending for maintenance, administration, and highway police will show only slight increases, but interest payments (as might be expected) are up substantially. However, the full impact of postwar financing of highway construction has not yet been reflected in these payments.

• **Long-term debt**—Total highway debt outstanding is expected to push beyond $10 billion by the end of this year. The estimate of $10.5 billion for yearend is $1.2 billion more than at the end of 1954, and $3.6 billion more than in 1953. Of the total debt, slightly more than half ($5.6 billion) will be toll facility revenue bonds.

U. S. Copper Price Moves Up To All-Time High of 43 cents

Right on the heels of a four-cent boost in copper, (ENR Aug. 25, p. 78) Anaconda Co. last week upped the posted price another three cents to a record high of 43 cents per lb. Wire and brass mill items also were boosted.

It seems certain that other producers will soon fall in line. At 43 cents a lb, the official price is still far below prices being charged on the open market by custom smelters. One such deal was reported last week at 50 cents. And the world price of copper, as quoted on the London Metal Exchange, is around 45 cents, as compared with 47 cents a week earlier.

• **Spread**—There often is a spread between the U. S. price and the world price, and sometimes it's as wide as 10 cents per lb. But the difference bothers the Chilean government, which has been taking the copper of local producers (including Anaconda and Kennecott) and selling two-thirds of it in the world market. With the U. S. and world prices coming closer together, it seems possible that U. S. buyers may get more copper.

Steel Bookings Hit Record; But Shipments Lag Far Behind

The demand-supply situation in fabricated structural steel is not getting any better. According to the American Institute of Steel Construction, July bookings reached 367,000 tons—a record for any month. Cumulative bookings through July total about 2,000,000 tons, up 34% from last year.

While orders are up 34%, shipments still lag far behind. For the first seven months, shipments are 13% behind last year—the same percentage as at the end of the first half. It seems quite likely that the delays in getting steel are going to get longer.

(*B&F continued on page 104*)

Segregation Uncertainties Handicap Bond Sales

The uncertain future of segregation in southern public schools is helping to make it more expensive for southern cities to borrow for schools.

Last week, Florida's Cabinet Board of Education rejected bids for $10.6 million worth of school revenue bonds offered in behalf of Brevard, Monroe, and Polk Counties. These bonds are backed solely by each county's share in the state gas tax. The Florida board said that interest cost set by bid—3.11%—was preposterously high.

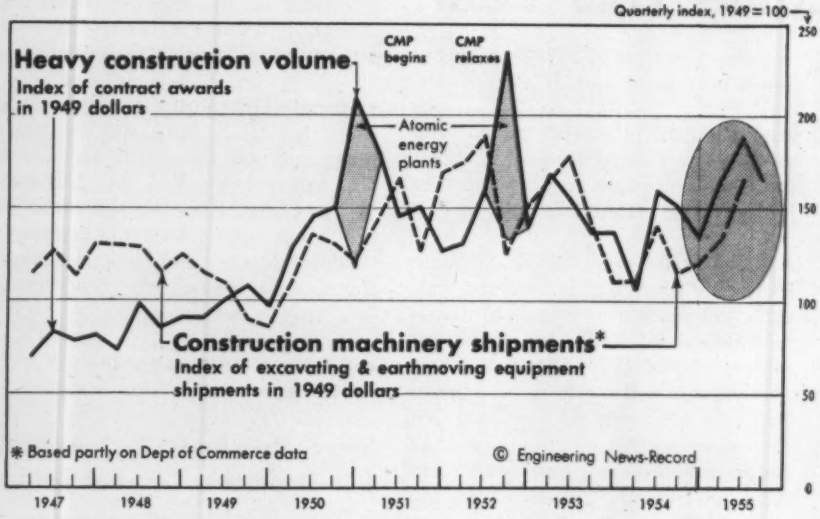
•**Uncertainties**—John Tremble, New York bond attorney, advised the board that investors were getting worried about the uncertainties of what southern states would do about segregation, and what the status of bonds would be as the situation develops. A Virginia court, for instance, ruled recently that it would be illegal under the state constitution to sell bonds for nonsegregated schools.

This is the third sizable bond issue to misfire during the past couple of months. As in the other cases, it's certain that part of the reason is the rising cost of money. Also, in this case the school bonds are revenue obligations, not backed by the general taxing power of the counties. Under the circumstances, it seems likely that the Florida counties will have to wait quite some time if they expect to do better.

The Florida bonds are part of a program that eventually may lead to about $100 million in bond issues for school construction. So far, about $54 millions have been issued. The last sale was in February.

Fact Book Gives Details On Pipeline Construction

Pipeline projects already completed by the natural gas industry since 1945 total about $4 billion. About $1 billion more of projects were authorized or pending at the start of this year. Those are the totals compiled by the Gas Appliance Manufacturers Assn. in its 1955 edition of "Natural Gas Construction Data." The book provides detailed information on projects, companies, and cities involved in pipeline expansion. Price $2.00 from GAMA, at 60 E. 42nd St., New York 17.



Equipment Shipments Pick Up Smartly

The upswing in shipments of construction equipment hit its stride during the second quarter of this year, according to the usual belated government figures. ENR's index of excavating and earthmoving equipment rose 22% above the first quarter. The index for the second quarter is 164, the highest since the second quarter of 1953 and 16% above a year ago.

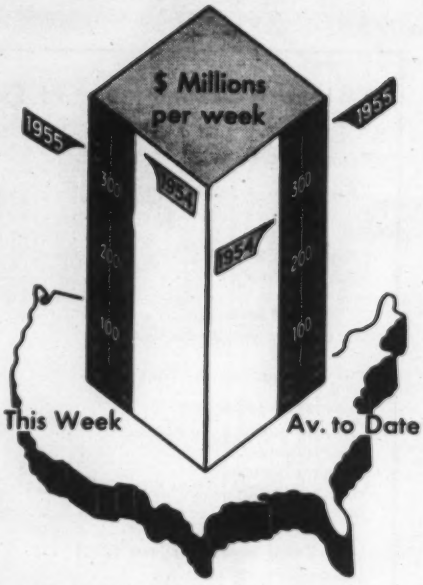
• **Across the board**—There were big increases in all major types of equipment. Tractors, including tracklaying and off-highway wheeled tractors, set a record dollar volume for any quarter. They topped $111 million, 24% above the first quarter.

Machinery for mounting on tractors also broke all records, with a 20% increase in the second quarter to $24 million.

The value of road construction and maintenance machinery was close to a quarterly record with a figure of $35 million.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

(millions of dollars)	This Week	Cumulative 35 wks 1955	1954	% chge
By Ownership				
Federal	$19.4	$1,186.0	$834.2	+42
State and municipal	144.6	3,652.2	3,315.2	+10
Total public	163.0	4,838.2	4,149.4	+17
Total private	166.3	7,840.0	5,576.9	+41
U. S. Total	$330.3	$12,678.2	$9,726.3	+30
By type of work				
Waterworks	$5.2	$182.8	$153.5	+19
Sewerage	6.3	259.1	254.9	+2
Bridges	8.6	319.9	335.6	−5
Highways	58.8	1,486.4	1,257.7	+18
Earthwork, waterways	16.9	355.3	189.5	+87
Buildings:				
Public, excl. hsg.	22.1	1,183.5	1,199.7	−1
Public housg.	31.1	214.5	165.5	+30
Private housg.	73.7	4,248.8	2,923.4	+45
Commercial	42.9	1,174.1	893.2	+31
Industrial	44.8	1,882.8	1,305.1	+44
Unclassified	19.9	1,371.0	1,048.2	+31
U. S. Total	$330.3	$12,678.2	$9,726.3	+30

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)	Week of Aug. 25	Cumulative 34 Wks 1955	% Chge '54-'55
Corporate securities	$24.3	$2,205.0	+9
State and municipal:			
All except housing	39.5	2,765.5	−22
Housing	0.8	72.0	−21
Federal loans	...	88.2	+13
Federal aid	...	853.5	+27
Total nonfederal	$64.6	$5,984.1	−7
Federal appropriations:			
In U. S.	...	$3,379.7*	+63
Outside U. S.	...	84.6	+155
Total new capital	$64.6	$9,448.4*	+11

* Fed approp wk of Aug 18 revised to $2,863,600

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	8/25	672.77	323.40	141.04
	7/28†	672.24	323.15	140.92
Building cost	8/25	478.90	258.88	136.13
	7/28†	478.48	258.41	136.01
Volume	July	699	284	202
	June	633	257	183

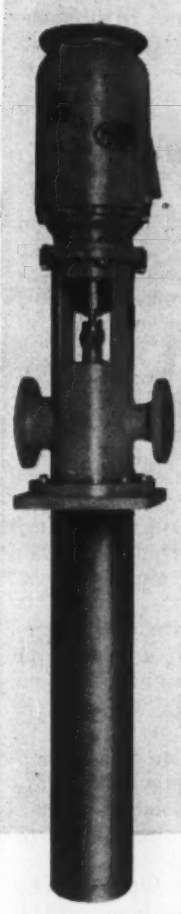
† Official ENR Indexes for August

FOR *ALL* *your* PUMPING problems:

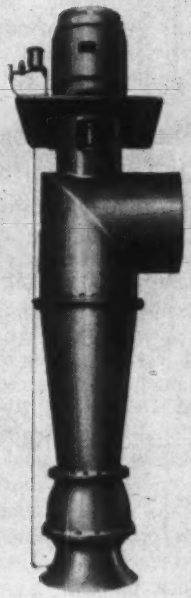
- HOT OR COLD WATER CIRCULATING
- LOW PRESSURE WATER HANDLING
- HIGH PRESSURE PUMPING
- BOOSTER PRESSURE SYSTEMS
- WATER SUPPLY AND TRANSFER
- LARGE VOLUME LOW HEAD PUMPING
- CHEMICAL PROCESS SERVICE PUMPS

YOU CAN DO A BETTER JOB with these *Dependable* PEERLESS PUMPS

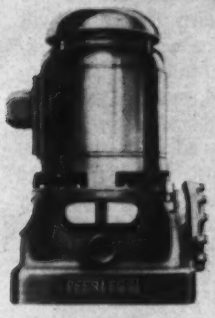
VERTICAL HORIZONTAL



VERTICAL ENCASED CENTRIFUGAL PUMP—The Peerless "Hydro-Line." For heavy duty condensate return service. Rugged, dependable, versatile, vertical design.



MIXED FLOW AND PROPELLER PUMPS—Giants in the world of pumping. For high capacities, low head. Single and multi-stage types for all water services. Also widely applied to flood control and drainage pumping. Capacities to 220,000 gpm.



VERTICAL TURBINE TYPE PUMPS—Electric and engine driven pumps for primary water supply from deep or shallow drilled wells. America's sales leader. All sizes, capacities and hp.

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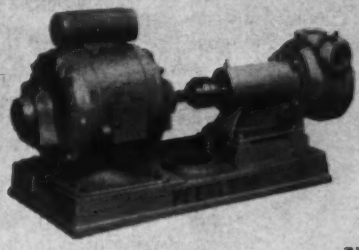

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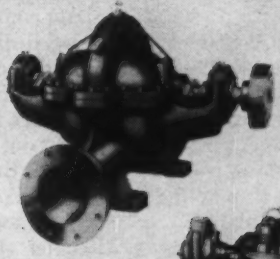

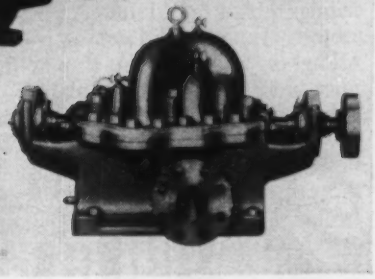

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- ☐ WATER SUPPLY PUMPS Bulletin B-141

NAME_____

COMPANY_____

STREET_____

CITY_____ STATE_____

ENR

Jurisdictional Disputes Board Upheld

Lathers lose appeal in ceiling dispute as NLRB proclaims its lack of authority to interfere with the joint board

This week, the government proclaimed anew that the proper—and final—agency for settlement of jurisdictional disputes in the construction industry is the National Joint Board for the Settlement of Jurisdictional Disputes.

The National Labor Relations Board, in a case that's brought the sharpest challenge so far to the authority of the joint board, unanimously upheld the board's right to make binding work assignments on AFL building trades unions.

The decision, in effect, means that the NLRB will continue to stay out of the construction industry's jurisdictional troubles. All parties involved in joint board rulings are bound by its findings, without appeal to the government.

This is the first time the long-standing NLRB policy has been reaffirmed since the agency came under a majority of Eisenhower appointees. The decision was handed down just as NLRB Chairman Guy Farmer left his government post to return to private law practice.

The case grew out of a dispute between two AFL building trades unions —the carpenters and metal lathers— over the right to install acoustical tile ceilings. It involved only one work project—at the A. W. Lee Company of Arlington, Va. But the dispute has since broken out in other areas.

In its decision, the NLRB upheld the joint board's order that the installation work should be handled by the carpenters. It rejected an appeal by Local 9 of the lathers' union to overthrow the joint board ruling and make its own decision in the matter.

With four members participating, the NLRB said the Taft-Hartley Act makes it clear the law's purpose is "to afford the parties an opportunity to settle jurisdictional disputes among themselves without government intervention whenever possible." It ruled that the processes of the joint board provide this method.

There are hundreds of similar jurisdictional disputes arising each year with virtually all settled amicably through the joint board. However, this dispute grew into a critical issue when the 13,000-member lathers union won support for its stand from the powerful AFL plumbers union (ENR May 19, p. 108).

It was the subject of several high level conferences by all building trades presidents, with the lathers and plumbers standing alone in the dispute. Finally, the dispute grew to such proportions that the lathers international union withdrew from the joint board last March.

In its appeal to the NLRB, Lathers' Local 9 argued that the joint board lacked authority to make the jurisdictional ruling for several reasons. Among them was its contention it wasn't bound by the joint board because neither the local nor A. W. Lee were signatories to the joint board agreement.

Overruling this position, the NLRB said the local must follow the joint board's determinations because the international union was part of the board's processes—and this binds all affiliates. A. W. Lee was also bound, although not contractually tied up with the joint board, because the company used the board's processes in this dispute and acquiesced in its ruling.

The dispute arose last November when the carpenters union appealed to the joint board to assign T-bar acoustical installation work to its members at the Lee project.

When the joint board, headed by Harvard Professor John T. Dunlop, ruled the assignment should go to the carpenters, the lathers union pulled 23 of its members off the job at nine Lee projects.

The strike was then ended just prior to district court injunction proceedings in Washington, D. C. with a mutual agreement to resume the Lee contract with Lathers' Local 9.

The case had reached the NLRB prior to this amicable settlement on an appeal from the company for an NLRB injunction to halt the strike by Local 9. At that time, an NLRB regional director ruled the joint board's decision was proper, and Local 9 appealed to the full board.

The lathers' appeal was directed specifically to the section of the Taft-Hartley Act that empowers the NLRB to make its own decision on jurisdictional disputes. But that provision also specifies this: The NLRB will take action "unless, within 10 days after notice that such charge has been filed, the parties to such dispute submit to the board satisfactory evidence that they have adjusted or agreed upon methods for the voluntary adjustment of the dispute."

Both the contractor and the local, said the NLRB, had "agreed upon methods" for settlement of disputes by adopting the joint board procedure. Therefore, it added, "We are without authority to determine the dispute."

And, the board wound up, "To hold otherwise would condone and sanction Lather Local 9's breach of the agreement, and would tend to discourage and render worthless the making of such agreements, contrary to the statutory purpose to encourage the voluntary adjustment of jurisdictional disputes."

Plumbers Union Studies Its Local Welfare Funds

Employer contributions to union health and welfare funds in the plumbing industry are running at a rate of $20 million annually. Eligible beneficiaries of the 106 funds now in existence total 116,570.

These are the figures of the National Committee on Health and Welfare Fund Research of the national plumbing and pipe fitting union, which held its second annual conference at Purdue University last month. The committee was appointed by president Martin Durkin in 1953 to review all funds established by local unions.

As a result of its study, the committee came up with a number of recommendations relating to fund management, among which were these:

- Equal representation by labor and management, and a provision in the trust agreement for resolution of deadlocks by a neutral trustee, umpire or arbiter.
- Active and direct supervision by trustees of all phases of fund management.
- No investments in a contributing employer's business, and none in which the insurance carrier or any trustee has a personal interest.
- Service by trustees without compensation.

The committee suggested extension of the traditional scope of benefits to cover prolonged illnesses, adequate loss of time benefits and the period of family readjustment after death.

(*Labor continued on page 108*)

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In Rome, Italy

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or Rome, N.Y.

Moto-Patcher repairing street, Rome, N. Y.

Moto-Paver and Moto-Patcher Speed the Job—Cut the Cost

In Rome, Italy, the main runway of the Ciampino Airport was completely resurfaced in two weeks recently with a single Moto-Paver. This job was accomplished while the runway was in daily use, and could be worked on only three hours each day.

In Rome, New York, both the Moto-Paver and the Moto-Patcher have delivered cost-cutting performances in resurfacing and patching streets respectively. These are but two examples of how the Moto-Paver and Moto-Patcher are speeding the job and cutting the cost on road, street and airport jobs in all parts of the U. S., Canada, South America, Europe and Africa.

New Bulletin MP-55 will be sent on request.

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LABOR

Arizona Unions Ratify Sand and Gravel Truce

Operating engineers, teamsters and laborers in Arizona have accepted the terms of a labor contract that ended a three-week strike in the sand and gravel industry (ENR, Aug. 25, p. 80).

Retroactive to July 1, the agreement grants immediate wage increases ranging from 12.5 to 15 cents an hour. In terms of construction costs, this is reported to mean a price boost of 50 cents a yard to consumers.

Some of the operating engineer and teamster classifications were readjusted, resulting in substantial wage boosts. The changes stemmed from union demands that the differential beween general construction and sand and gravel rates be eliminated.

Provision is also made in the new four-year contract for an annual wage boost of 4%, tied to the cost-of-living, and 2.5 cents next year.

Prevailing Wages Now Apply To Public Works in Hawaii

Public works projects in the Territory of Hawaii became subject last month to the prevailing wage requirements of the Little Davis-Bacon Act passed this year by the Territory.

The first schedule of minimum wages, covering 112 classifications, has been mailed to contractors and other interested groups. Rates range from a low of $1.25 for firemen and oilers to a high of $2.75 for cable splicers.

Under the law, determination of prevailing wages for the communities is made by the Commission of Labor and Industrial Relations. New schedules must be issued every three months. Requests for determination of wages for categories not listed must be made to the labor director.

Labor Briefs . . .

• **Fringe benefits and bankruptcy**—Union health and welfare fund contributions due from a bankrupt employer have no priority, says a federal court in New York, because they're not wages. Employes have no right to the payments and don't pay an income tax on them.

• **Airbase strike**—Millions of dollars worth of construction at Offutt Air Force Base, Neb., has borne the brunt of a teamsters' strike called on wages and working conditions. Deeper issues were reported to embrace jurisdiction between laborers and teamsters and inclusion of a "hot cargo" clause.

OFFICIAL PROPOSALS

Bids: September 22, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 22nd day of September 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, Acting District Engineer, 353 Broadway, Albany, N. Y.						
Albany	C.T. 55-13	New York State Thruway: Catskill Section-Sub. 3A (Albany Div. Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$5,500 Plans $10	$100,000
Greene	C.T. 55-12	New York State Thruway, Catskill Section-Sub. 7 (Catskill Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,000 Plans $10	50,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Onondaga	O.T. 55-9 M.T. 55-10	New York State Thruway, Ontario Section-Sub. 8A Mohawk Sect.-Sub. 8B	....	Furnish and Install 8,200 L.F. Chain Link Fence 16,000 L.F. Cattle Wire Fence	$2,900 Plans $10	36,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court Street Buffalo, N. Y.						
Chautauqua	E. T. 55-7 S.T. 55-9	New York State Thruway, Erie Section-Sub. E-2B (West Forest Road to Brockton) Walker Rd., Pecor Rd., Mathews Rd., Lake Ave. & Acc. & Marginal Roads	4.88 (2.40) (Acc.)	Two Crse. Cem. Conc. Pavt. 2 @ 25′=4.86 Mi. Bit. Mac. Pen. Meth. Asp. Type 1=1.02 Mi. Asp. Conc. Ty. 2B=0.22 Mi. Gravel Surf. Treat.=0.97 Mi. Misc. Work=0.21 Mi. 6 Sep. Comp. I-Beam 144.5′, 271.7′, 330′, 188.5′ 182.5′ and 138′ 1 Reinf. Conc. Arch 20.7′	$215,000 Plans $50	3,908,000
Chautauqua	E.T. 55-9	New York State Thruway, Erie Section-Sub. E-3A (Brockton to Pomfret Town Line) (Sep. of Grades with the New York Central, Nickel Plate and Pennsylvania RR'S near Swede Rd.)	0.23	Two Crse. Cem. Conc. Pavt. 2 @ 25′=0.13 Mi. Cem. Conc. Pavt.=0.10 Mi. 2 Frs. Comp. I-Beam @ 432′ ea.	$78,000 Plans $15	1,416,000
Erie	E. T. 55-8 R.C. 55-72 S.T. 55-10	New York State Thruway, Erie Section, Sub. E-6B (Cain Rd. to Evans Ctr.-Eden Rd.) Angola-Brant-Farnham, Angola-Evans Center, S. H. 642, Cain Rd., Pontiac Rd., Ryther Rd., Gowans Rd., Evans Ctr.-Eden Rd. & Versailles Plank Rd.	4.48 (2.94) (Acc.)	Two Crse. Cem. Conc. Pavt. 2 @ 25′=4.37 Mi. Cem. Conc. Pavt.=0.07 Mi. Asp. Conc. Opt.=2.94 Mi. Misc. Work=0.04 Mi. 4 Hy. Seps. Comp. I-Beam 356′, 432′, 330′ & 320′ 2 Brs. Comp. I-Beam @ 278′ ea. 3 Brs. Twin Box @ 20′ ea.	$232,000 Plans $100	4,225,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Jefferson	D.A. 55-2	Dry Hill Access Road Proj. D-AD-4(2)	1.15	Asp. Conc. Opt.=1.14 Mi. Misc. Work=0.01 Mi. Misc. Work=0.01 Mi.	$3,000 Plans $10	51,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	C.T. 55-11	New York State Thruway, Catskill Section-Sub. 3B (Kingston Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,500 Plans $10	63,000
Westchester	H.T. 55-7	New York State Thruway, Hudson Section-Subs. 9A, 10 & 11 (New York City Line to Tappen Zee Br., East Approach)	....	Furnish and Install 25,900 L.F. Chain Link Fence 2,750 L.F. Woven Wire Fence	$7,000 Plans $10	118,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway at Little East Neck Road, Babylon, L. I., N. Y.						
Suffolk	SMSP 55-2	Sunken Meadow Spur Parkway Contract No. 7	0.95	Relocation of Stream Channel	$12,000 Plans $10	208,000
Nassau	FASS 55-7	Peninsula Boulevard, Cont. 4 (Lexington St. to Southern State Pkwy.) Proj. S-319(5)	1.32	Asp. Conc., Opt.=1.13 Mi. Misc. Work=0.19 Mi. 2 Ped. Overpasses I-Beam 124.7′ ea.	$55,000 Plans $15	925,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: September 15, 1955

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Buildings Law, sealed proposals will be received until 10:30 A.M., Daylight Saving Time, on September 15, 1955 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract B.P. 55-34A for Beach Protection (Extension of Stone Groins) at Troy and Clayton Avenues East Atlantic Beach, Town of Hempstead, Nassau County, New York

AND

Contract B.P. 55-51, Part III for Beach Protection (Four Stone Groins) at Atlantic Beach, Town of Hempstead, Nassau County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Mr. M. E. Goul, District Engineer, 325 West Main Street, Babylon, Long Island, N. Y.
(c) Mr. Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Engineer's Estimate of Cost for each of these Contracts is as follows:

B.P. 55-34A	$108,000.00
P.P. 55-51, Pt. III	735,000.00

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each roposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: September 21, 1955

Construction of Trunk Sewer

CONSTRUCTION OF
CONTRACT NO. I
WEST SIDE TRUNK SEWER
STATE FAIR BOULEVARD TO BRIDGE STREET, AND FREEMAN AVENUE SEWER EXTENSION
WEST SIDE SANITARY DISTRICT
ONONDAGA COUNTY, NEW YORK

Separate sealed bids for the construction of the West Side Trunk Sewer, State Fair Blvd. to Bridge Street, and the Freeman Avenue Sewer Extension will be received for the Onondaga Public Works Commission by the County Purchasing Agent, Room 107, County Court House, Syracuse 2, New York until 2 P.M. (Eastern Daylight Saving Time), September 21, 1955 and there at said office publicly opened and read aloud.

The West Side Trunk Sewer includes the construction of approximately 5,000 lineal feet of 42-inch sanitary sewer and approximately 240 lineal feet of 20-inch and 21-inch sanitary sewers, together with all connections and appurtenances.

The Freeman Avenue Sewer Extension includes the construction of approximately 2,500 lineal feet of 24-inch sanitary sewer with all connections and appurtenances.

Information for Bidders and all Contract Documents may be examined at the said office and copies of the same obtained upon payment of Ten Dollars ($10.00) for each set. Any bidder who has submitted a bona-fide proposal, upon returning such set in good condition within thirty days of the date of receiving bids, will be refunded the full amount of his deposit. One-half of the deposit will be refunded to all non-bidders upon return of such set within thirty days of the date of receiving bids.

Copies of the Contract Documents may be examined at no expense at the above office, at the office of the Onondaga Public Works Commission, Room 400, County Court House, Syracuse 2, New York, and at the office of O'Brien & Gere, Consulting Engineers, 400 East Genesee Street, Syracuse 2, New York.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

ONONDAGA COUNTY
By R. W. Sollinger
Purchasing Agent

Dated: Aug. 24, 1955

OFFICIAL PROPOSALS

Bids: September 20, 1955

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the City Purchasing Agent, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A.M., E.S.T. September 20, 1955; at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

DIVISION J—CARY STREET ROAD INTERCEPTING SEWER, PART 2

Location: The sewer is to be constructed in Cary Street Road from Hamilton Street, northwesterly to Maple Avenue, and in Banbury Road from Cary Street Road, southwesterly to Exeter Road, in the City of Richmond, Virginia.

Type of Work: The work comprises the construction of approximately 285 linear feet of 24-inch and 43 linear feet of 18-inch concrete pipe sewer and approximately 1472 linear feet of 30-inch and approximately 7862 linear feet of 36-inch reinforced concrete pipe sewer, complete with manholes, weir and junction chambers, and all other structures, as shown, specified, and directed.

DIVISION K—RIVER ROAD FORCE MAIN

Location: The force main and the water main are to be constructed from the site of the Gambles Mill Road Pumping Station, located on the south side of River Road at Gambles Mill Road, northeasterly in River Road to the intersection of Cary Street Road & Maple Avenue, in the City of Richmond, Virginia, and partly in Henrico County, Virginia.

Type of Work: The work comprises the construction of approximately 4172 linear feet of 24-inch reinforced concrete pipe force main, and approximately 1,999 linear feet of 12-inch and approximately 187 linear feet of 4-inch cast iron water main, complete with all appurtenances, as shown, specified, and directed.

The work to be done is part of the Sewage Disposal Project, and is divided into two Divisions. The Bidder may submit a proposal for either or both Divisions. but not for any port of a Division.

The Proposal and other Contract Documents may be examined at the office of the Director of the Department of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the Contract Documents may be obtained from the Director or the Engineers upon deposit of Twenty-five Dollars for each set, to be refunded upon the return of such set in good condition within 10 days after the opening of bids.

J. W. HUFFMAN
CITY PURCHASING AGENT

Bids: September 15, 1955

Delaware River Port Authority Administration Building Camden, New Jersey

WALT WHITMAN BRIDGE—PHILADELPHIA APPROACHES
ROADWAY GRADING AND DRAINAGE, 28TH STREET AND VARE AVENUE TO MOYAMENSING AVENUE, AND SEPARATION STRUCTURES AND CITY STREET CHANGES AT MOYAMENSING AND PASSYUNK AVENUES
CONTRACT NO. P-7

Sealed bids will be received for ROADWAY GRADING AND DRAINAGE, 28TH STREET AND VARE AVENUE TO MOYAMENSING AVENUE, AND SEPARATION STRUCTURES AND CITY STREET CHANGES AT MOYAMENSING AND PASSYUNK AVENUES, for new bridge between Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey, known as Contract No. P-7, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M., (Daylight Saving Time), September 15, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $200,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

Bids: September 15, 1955

Delaware River Port Authority Administration Building Camden, New Jersey

WALT WHITMAN BRIDGE—GLOUCESTER APPROACHES
BRIDGES OVER CRESCENT BOULEVARD AND BLACK HORSE PIKE
CONTRACT NO. G-5

Sealed bids will be received for BRIDGES OVER CRESCENT BOULEVARD AND BLACK HORSE PIKE, for new bridge between Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey, known as Contract No. G-5, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M. (Eastern Daylight Time), September 15, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $50,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

Bids: September 15, 1955

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Daylight Saving Time, on September 15, 1955 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE HORACE HARDING EXPRESSWAY, SECTION 1, FROM GRAND CENTRAL PARKWAY TO LAWRENCE ST., QUEENS CO., CITY OF NEW YORK, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-79

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.

(b) Mr. M. E. Goul, District Engineer, 325 West Main Street, Babylon, Long Island, N. Y.

(c) Mr. Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $27,725.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,390.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: Postponed to October 14, 1955.

Primera Central Hidroelectrica Cubana (Prichec)

UNDERGROUND EXCAVATION AND APPURTENANT WORK
CONTRACT C-1

Bids for Underground Excavation and Appurtenant Work for the Hanabanilla Project were advertised by the Primera Central Hidroelectrica Cubana, in Engineering News-Record, issue of August 4, 1955, for receipt and opening on September 15, 1955.

Addendum No. 2 to the Contract Documents for Contract C-1 postpones the receipt and opening of bids until 10:00 AM Eastern Standard Time on October 14, 1955.

Copies of Addendum No. 2 may be examined or obtained at the Havana office of PRICHEC or at the New York office of Knappen-Tippetts-Abbett-McCarthy.

KNAPPEN-TIPPETTS-ABBETT-McCARTHY
ENGINEERS for PRICHEC

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4464) will be received at Palisades, Idaho, until October 13, 1955, for furnishing labor and materials for completion of Palisades Power Plant and Switchyards, Palisades Project, Idaho. Location near Palisades, Idaho. Principal items are lump sums completion of the power plant, includes installing nonembedded parts of four hydraulic turbines, governors, auxiliary hydraulic equipment, electrical equipment, and other materials in powerhouse and switchyards; lump sums construction of two switchyards, includes furnishing and installing steel structures and materials; and other work. Completion time 670 days. For particulars, address Bureau of Reclamation, Palisades, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS

Bids: September 20, 1955

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the City Purchasing Agent, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A.M., E.S.T. September 20, 1955; at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Notice to Bidders

Location: The equipment to be furnished shall be delivered to site of the Gambles Mill Road Pumping Station south of and adjacent to River Road at Gambles Mill Road near the westerly city limits of the City of Richmond, Virginia.

Type of Work: The equipment to be furnished is part of the West End portion of the Richmond Sewage Disposal Project and comprises the following:

Three (3) motor-driven vertical sewage pumps of 1.5, 3.0 and 6.0 mgd capacities at heads of 180 and 185 feet.

One (1) gasoline engine-driven vertical sewage pump of 6.0 mgd capacity at 185 feet head.

The Proposal and other Contract Documents may be examined at the office of the Director of the Department of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the Contract Documents may be obtained from the Director or the Engineers upon deposit of Twenty-five Dollars for each set, to be refunded upon the return of such set in good condition within 10 days after the opening of bids.

J. W. HUFFMAN
CITY PURCHASING AGENT

Sealed bids for the purchase of 250-ton Floating Crane U.S. AJAX and one lot of spare parts, offered for sale under Invitation 179 by Panama Canal Company will be received until 10:30 AM Eastern Standard Time Septmeber 30, 1955. The U.S. AJAX still classed as one of the largest floating cranes of its type was manufactured by Deutsche Maschinenfabrik A.G. of Duisberg, Germany and floated to the Canal Zone in July, 1914, on a trip which took 74 days. The general condition of the hull and superstructure is sound and good; finish and upkeep excellent. Detailed specifications concerning the floating crane offered under this invitation may be obtained along with bid forms, by application to Procurement Officer, Panama Canal Company, 21 West St., New York 6, N. Y.

DEPARTMENT OF ARMY, CORPS OF ENGINEERS. Sealed bids will be received on 11 October 1955 for the widening of the west three miles of the Calumet-Sag Channel. The work involves the widening of existing 60 foot channel to a width of 225 feet. The approximate quantities are as follows: Common Excavation 2,015,000 cu. yd.; Rock Excavation 1,147,000 cu. yd.; Dumped Riprap 50,000 cu. yd. Plans and specifications may be obtained without deposit from Chicago District Office, Corps of Engineers, U.S. Army Room 475 Merchandise Mart, Chicago, Ill.

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the construction of the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract No. 180, Dauphin County, Pennsylvania.

The work to be performed under this contract consists of the construction of the Administration Building at location on the Turnpike listed above, not including however, the Plumbing System, the Heating System, the Electrical System, the installation of Elevator Equipment, the macadam paving or the seeding and sodding, except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Plumbing System for the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract 180-A, Dauphin County, Pennsylvania.

The work to be performed under this contract is generally in and around the Administration Building. The work does not incude the Electrical System, the Heating System, the installation of Elevator Equipment nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order for the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

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PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Heating System for the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract 180-B, Dauphin County, Pennsylvania.

The work to be performed under this contract is generally in and around the Administration Building. The work does not include the Electrical System, the Plumbing System, the installation of elevator Equipment nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. Money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Heating System for the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract 180-B, Dauphin County, Pennsylvania.

The work to be performed under this contract is generally in and around the Administration Building. The work does not include the Electrical System, the Plumbing System, the installation of elevator Equipment nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. Money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5.00) dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

At Your Service...

The Searchlight Section is at your service for bringing business needs or "opportunities" to the attention of men associated in executive, management, sales and responsible technical, engineering and operating capacities with the industries served by McGraw-Hill publications.

OFFICIAL PROPOSALS

Bids: October 3, 1955

Construction of a Sewerage Treatment Plant

ADVERTISEMENT

Notice is hereby given that sealed bids will be received for Section G in accordance with the law by the Puerto Rico Aqueduct and Sewer Authority until 3:00 o'clock P.M. on the third day of October, 1955, at the office of the Authority in Santurce, Puerto Rico, and will then be publicly opened and read.

The work comprises furnishing materials and performing the labor for the construction of the Puerto Nuevo Sewage Treatment Plant, a primary sewage treatment plant with an initial capacity of twenty-four (24) million gallons per day including influent sewer, influent junction chamber, screening chamber, main sewage pumping station, grit chamber, settling tanks, effluent chamber, outfall sewer, sludge pumping station, sludge digestion tanks and digester control building, non-potable water supply system, administration building, garage and shop, outside connecting piping, roadways and paths, grading, miscellaneous structures and appurtenances and the installation of screening, grit handling, settling tank, chlorinating and pumping equipment furnished by others.

Copies of the plans and specifications may be examined without charge at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico, or at the office of Buck, Seifert and Jost, Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, Stop 26-½, Fernandez Juncos Avenue, Santurce, Puerto Rico or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, upon deposit of cash or certified check payable to the Puerto Rico Aqueduct and Sewer Authority in the amount of One Hundred and Fifty ($150.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received or else the entire deposit will be forfeited.

Bids will be received only from persons who have requested the plans and specifications and made the required deposit therefore under their own names. These documents cannot be obtained later than September 16, 1955.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to five (5%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
by RAFAEL V. URRUTIA
Executive Director
BUCK, SEIFERT AND JOST
Consulting Engineers

Bids: September 20, 1955

Dearborn-Melvindale Disposal Authority, Dearborn, Michigan

NOTICE TO CONTRACTORS

Sealed bids for the design and construction of a Refuse Incinerator in Dearborn, Mich., will be received at the office of the Chairman of the Authority, Second Floor, Department of Law, Dearborn City Hall, Dearborn, Mich., until 2 p. m. Eastern Standard Time, on September 20, 1955.

Project involves design and construction of a 700-ton per day Refuse Incinerator.

Contract documents may be examined and obtained at above office and office of Metcalf & Eddy, Engineers, 1300 Statler Bldg., Boston, Mass., weekdays except Saturdays and holidays; $100 deposit.

Bid security $75,000 cashier's or certified check; 100% performance and lien bonds required.

BOARD OF TRUSTEES
DEARBORN-MELVINDALE
DISPOSAL AUTHORITY
By Dale H. Fillmore, Chairman

Bids: September 14, 1955

Texas Turnpike Authority

DALLAS-FORT WORTH TURNPIKE PROJECT
NOTICE TO CONTRACTORS

Sealed proposals for constructing 10.22 miles of grading and drainage from 0.5 miles West of Ederville Road to 0.3 miles West of Duncan-Perry Road covered by Contract No. D-FW 23, in Tarrant County, will be received at the Texas Turnpike Authority, 214 First Federal Savings Building, Austin 1, Texas, until 2:30 P. M., September 14, 1955, and then publicly opened and read.

This is a "Turnpike Project" as defined in House Bill No. 4, Chapter 410, Page 967, Acts of the 53rd Legislature, 1953, Regular Session (Codified as Article 6674v, VRCS). No provisions herein are intended to be in conflict with the provisions of said Act.

Section 5(m) of said Act states that "All contracts of the Authority for the construction, repair, or maintenance of any turnpike project shall, insofar as applicable, be made and awarded under the same conditions, terms, requirements and provisions as are now provided for with respect to contracts of the State Highway Department in Sections 8 and 9 of Chapter 186, pages 457, 458, Acts, Thirty-ninth Legislature, 1925, as amended by Chapter 103, page 286, Acts, Forty-third Legislature, First Called Session, 1933, and Sections 10 and 13 of Chapter 186, page 458, Acts, Thirty-ninth Legislature, 1925, codified as Article 6674h, 6674i, 6674j, and 6674m, Vernon's Civil Statutes, and in the making and awarding of such contracts, the Authority shall, insofar as applicable, be under the same duties and responsibilities with respect thereto as are now imposed upon the State Highway Department by the terms and provisions of the Statutes herein enumerated".

In accordance with the provisions of said House Bill, the Texas Turnpike Authority has adopted from the Texas Highway Department and set forth in the proposal the wage rates, for each craft or type of workman or mechanic needed to execute the work on the above named project, new prevailing in the locality in which the work is to be performed, and the Contractor shall pay not less than those wage rates as shown in the proposal for each craft or type of laborer, workman or mechanic employed on this project.

Legal holiday work shall be paid for at the regular governing rates.

Plans and specifications covering the proposed construction may be seen for examination and information at the office of the Texas Turnpike Authority, 214 First Federal Savings Building, Austin 1, Texas, at the Dallas-Fort Worth Turnpike Project Office at 315 S. E. 14th Street, Grand Prairie, Texas, and at the office of the Section Engineer, Turnpike Engineers, at 205 W. Main Street, Arlington, Texas. Proposals and plans may be obtained from the Texas Turnpike Authority, 214 First Federal Savings Building, Austin 1, Texas, upon the payment of twenty-five ($25.00) dollars which sum will not be refunded. The usual rights are reserved.

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Furnishing and Installation of Elevator Equipment for the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract 180-D, Dauphin County, Pennsylvania.

The work to be performed under this contract is generally in and around the Administration Building. The work does not include the Plumbing System, the Heating System, the Electrical System nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to pubic inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is widthdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5:00 dollars per copy.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

Bids: September 20, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 20th day of September 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room #1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Electrical System for the Administration Building at the Harrisburg East Interchange on the Pennsylvania Turnpike System, Contract 180-C, Dauphin County, Pennsylvania.

The work to be performed under this contract is generally in and around the Administration Building. The work does not include the Plumbing System, the Heating System, the installation of Elevator Equipment nor building construction except as noted in the specifications or as shown on the Contract Drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on 26 August 1955 at the office of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders.

Plans and contract documents may be obtained from the Commission upon deposit of fifty (50.00) dollars for each set. No refund will be made for plans returned, unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

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The Pennsylvania Turnpike Commission reserves the right to waive any informalities in or to reject any or all bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
19 August 1955

OFFICIAL PROPOSALS

Bids: October 11, 1955

Wesley E. Seale Dam Project Near Corpus Christi, Texas

NOTICE TO BIDDERS

Sealed bids, in duplicate, will be received by the Lower Nueces River Water Supply District, at 211 Weber Building, Corpus Christi, Texas, until 1:30 P.M., C.S.T., Tuesday, October 11, 1955, and all bids will be publicly opened and read at 2:00 P.M., on that date, at the Corpus Christi Chamber of Commerce Office, 1201 N. Shoreline Drive, Corpus Christi, Texas, for constructing the

WESLEY E. SEALE DAM PROJECT ON THE NUECES RIVER, FIVE MILES SOUTH OF MATHIS, TEXAS.

The project consists of two Ambursen type reinforced concrete slab-and-buttress spillways 60 feet high, approximately 1346 feet and 1560 feet long, respectively; three sections of rolled fill dam approximately 2200 feet, 500 feet, and 400 feet long, respectively; an outlet structure and appurtenant works; and a field office building. The following approximate quantities are required for the principal items:

Stripping	75,000 cu. yds.
Core Trench Excavation	46,000 cu. yds.
General Excavation	146,000 cu. yds.
Trenching, and Finishing Excavation	30,000 cu. yds.
Backfill	14,000 cu. yds.
Embankments, Rolled Fill	787,000 cu. yds.
Embankments, Unclassified	110,000 cu. yds.
Topsoil	4,000 cu. yds.
Reinforced Concrete in Foundation Floors, Mats, and Paving	40,000 cu. yds.
Reinforced Concrete in Buttresses, Piers, Deck Slabs, Abutments and Structures	47,000 cu. yds.
Gravel Fill	31,000 cu. yds.
Riprap	26,000 cu. yds.
Rockfill	2,000 cu. yds.
Road Surfacing	12,000 sq. yds.
Steel Sheet Piling	5,650 tons
Reinforcing Steel	5,910 tons
Automatic Steel Crest Gates 9' x 37'	60 gates
Intake Tower, Complete with Valve & Sluice Gates	1 complete
Field Office Building 26' x 50' x 8'	1 complete

The plans, specifications, and bidding documents may be secured from the office of the general Manager, Lower Nueces River Water Supply District, 211 Weber Building, Corpus Christi, Texas; or from Reagan & McCaughan, 320 Wilson Building, Corpus Christi, Texas; or from Ambursen Engineering Corporation, 295 Madison Avenue, New York 17, or 603 Rosalie Avenue, Houston 6, Texas. A deposit of $100.00 is required for each set of plans and specifications. Upon return of plans and specifications in good condition within fifteen days after date of bidding to the Lower Nueces River Water Supply District, 211 Weber Building, Corpus Christi, Texas, the full deposit will be refunded to bona fide bidders and 50% to non bidders.

Bids must be made on the standard proposal form, in duplicate, and must be accompanied by a bid security in a total amount not less than 5% of the total maximum bid price. Of this bid security, it is mandatory under the Texas laws governing the District that a sum equalling not less than 1% of the total amount of the bid must be in the form of a certified check payable to the order of the Lower Nueces River Water Supply District. The remainder of the security may be in the form of a certified check or, at the option of the bidder, a bidder's bond. The District reserves the right to reject any and all bids, or to accept any bid deemed advantageous to it.

No bidder may withdraw his bid within 45 days after the opening thereof.

The successful bidder will be required to be bonded to the District in a sum equal to 100% of the amount of his proposal.

The bidder is hereby notified that the specifications contain the general prevailing wage scale and the Contractor shall not pay less than the wage rates so shown.

Dated this 2nd day of August 1955.

LOWER NUECES RIVER WATER SUPPLY DISTRICT
GUY I. WARREN
President
CHARLES GALLAND
Secretary

OFFICIAL PROPOSALS

Bids September 19, 1955

Proposal for North Branch Water Main

INVITATION FOR BIDS

Proposals will be received by the Mayor and City Council at the office of the City Clerk, City Hall, Cumberland, until but not after September 19, 1955 at 10:00 A. M. Eastern Daylight Saving Time. At 10:00 o'clock on said date they will be publicly opened and publicly read by the City Clerk in said City Hall. Proposal must be submitted in duplicate in a sealed envelope endorsed "Proposal for North Branch Water Main." If mailed, it must be enclosed in an outer sealed envelope addressed to City Clerk, City Hall, Cumberland, Maryland. Each bid must be accompanied by a certified check or bid bond in amount of 5% of the bid. If alternatives are bid, the bond or check is to cover 5% of the larger. The work includes the installation of approximately 27,000 feet of 18" water main, with all valves, fittings, connections, structures and accessories pertinent thereto. The City will provide 18" pipe and bends and 18" by 8" tees and 18" by 6" tees. Specifications, proposal forms, drawings and other contract documents may be examined at the office of the City Engineer, City Hall, Cumberland, Maryland, and may be procured for $20.00 per set. This payment will not be refunded. The Commission will reserve the right to waive any formalities and to reject any or all bids, and to accept any proposal which in their judgment is to the best interests of the City. A performance bond in the full amount of the accepted bid will be required of the successful bidder.

WILLIAM J. EDWARDS,
Commissioner Water & Light.

OFFICIAL PROPOSALS

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4505) will be received at Loveland, Colorado, until September 27, 1955, for furnishing labor and materials for South Platte Supply Canal Rehabilitation and Enlargement, Firestone Section, Station 1026+84 to Station 1062+40 and Station 1094+55 to Station 1699+00, Colorado Big-Thompson Project, Colorado. Location near Fort Lupton, Colorado. Principal items are 52,000 cu. yds. of excavation; 62,000 cu. yds. of earth lining; 108 M.b.m. timber in structures; 460 cu. yds. of concrete; 1,030 cu. yds. of riprap; 50 acres of sowing grass seed; and other work. Completion time 210 days. For particulars, address Bureau of Reclamation, P. O. Box 449, Loveland, Colorado; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Construction Foreman for firm engaged in extensive sewer, water main and treatment plant facilities. Permanent position in N. Y. State area. Only qualified applicants with broad experience. P-6595, Engineering News-Record.

Wanted: Instructor in engineering drawing and descriptive geometry. Salary $3600 for 9 month period. Dept. of Engr. Drawing, University of North Dakota, Grand Forks, North Dakota.

Master Mechanic Wanted must be experienced in heavy construction equipment of all types. Good opportunity with established contractor, in Southwestern Pennsylvania. Send complete resume, with name, address and salary requirements. P-7313, Engineering News-Record.

Estimator for building construction firm with main office in Boston. Must have engineering background and experience in this type of work. Permanent position for qualified applicant. Salary open. Write Beacon Construction Company, 102 Hano Street, Allston 34, Massachusetts.

Administrative Assistant to Chief construction engineer for a large consulting engineering firm located in New York City. Must have had experience as resident engineer on highway survey, construction, bridges, etc. Applicants requested to furnish resume of education and experience. All applications will be held confidential. Salary open. P-7399, Engineering News-Record.

Estimator; Experienced in taking-off quantities for public buildings, industrial and commercial construction. Permanent position with General Contractor located in Ohio. Write, fully stating experience, education and salary expected. All replies confidential. P-7483, Engineering News-Record.

Construction Engineer for general contractor doing engineering type construction. We want a man that has growth possibilities and wants to get ahead. P-7295, Engineering News-Record.

Engineer with estimating and management experience for general contractors office doing industrial and public works building. Excellent opportunity. State age, experience and references. Our employees know of this ad. Midwest location. P-7492, Engineering News-Record.

Engineer qualified to teach structural design. Full or part-time. Rank and salary open. C. E. Dept., Manhattan College, N. Y. 71, N. Y.

Wanted—Open pit mining engineer for manganese mining in Virginia area. Write full qualifications, age and salary, to Mining Contractors, Inc., Box 790, Cedar Rapids, Iowa.

Experienced structural designers and detailers for work on reinforced concrete and steel highway structures with consulting engineers. Please give age, qualifications and salary requirements in reply. P-7462, Engineering News-Record.

Civil Engineer Public Works Engineering with progressive municipality 65,000 population. Salary $5040-$5340-$5640-$5940. Starting salary contingent on experience. Write Personnel, Municipal Building, Hamilton, Ohio.

Needed immediately experienced structural engineer permanent position with progressive established engineering firm. Salary open. Write complete details education & experience to H. J. Ross Associates, 3047 Biscayne Blvd., Miami, Fla.

Engineer—Estimator, foreman, for sewer, water and roadwork. Must be top man, willing to work hard. The Forest Company, 121 North Main St., Wharton, N. J. Phone Dover 6-2320.

Building Construction Superintendent wanted by Boston Building Contractor for large Public Building Supervision in New England. Send complete details, salary requirements, and when available. P-7526, Engineering News-Record.

(Continued on following page)

Notice to Advertisers

Because of the Labor Day Holiday, September 5th, the "Searchlight" pages of the

September 15th Issue of
ENGINEERING NEWS-RECORD

Close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME
Display and Undisplayed Ads
Friday, Sept. 2nd

DESIGN ENGINEERS

PERMANENT OPPORTUNITIES
AT OUR

Cleveland, Ohio, offices with an engineering firm having over 50 years of successful operation doing business all over the world.

The McKEE organization continues to grow and expand and continues to offer many permanent present and future opportunities for qualified, experienced ENGINEERS and DESIGNERS in the following fields:

—STRUCTURAL STEEL
—CONCRETE
—ELECTRICAL
—HEAVY MACHINERY
—PIPING
—PROCESS HEATERS
—EQUIPMENT SPECS
—ARCHITECTURAL
—MECHANICAL
and
—ELECTRICAL DRAFTSMEN
—PIPING DRAFTSMEN

Applicants should have at least 5 years of good design experience in any of the above fields, applicable to heavy construction as described below—

McKEE designs and constructs Blast Furnaces, Open Hearth Furnaces, Sintering Plants and Auxiliary Facilities; Oil Refineries, Chemical and Petro-Chemical Plants and Atomic Energy, Aluminum, Industrial and Other Non-Ferrous Metal Plants; All of these afford a wide diversification of opportunities to energetic and qualified engineers.

HERE IS AN OPPORTUNITY FOR YOU TO UTILIZE YOUR ABILITIES AND TALENTS AS A DESIGN ENGINEER

McKEE offers top compensation commensurate with experience and ability. No age limitations.

In addition to good earnings, permanency and opportunities, McKEE offers a pension program to qualified persons. Liberal vacation and sick leave, insurance. Promotion from within the organization. Transportation and moving allowances; an excellent job evaluation and merit-rating program as well as the best in working conditions in air conditioned offices.

Please Send Resume To:

Edward A. Kolner
ARTHUR G. McKEE & CO.
2300 Chester Avenue
CLEVELAND, 1, OHIO

HEATING & VENTILATING ENGINEER

Graduate Engineer experienced in all phases of paper mill heating and ventilating air conditioning and refrigeration for large expanding and progressive mill in Maryland. Under 35 years of age, good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

TOWN ENGINEER

Civil Engineer able to qualify for Virginia registration. Duties include general supervision of design review, construction and maintenance of streets, storm drainage, water and sewerage systems, for northern Virginia town of 5000. Salary $5000-$6000, depending on qualifications.

ASST. TOWN ENGINEER

Graduate Civil Engineer to assist Town Engineer and serve as Building Inspector, Zoning Administrator and Inspector of street and utility construction. Salary $4500-$5500, depending on qualifications and experience.

Reply
Town of Fairfax
101 Mechanic Street, Fairfax, Virginia

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant | Civil Service Opportunities . . . | Employment Agencies
Positions Wanted | Selling Opportunities Wanted | Employment Services
Part Time Work | Selling Opportunities Offered | Labor Bureaus

NATIONAL COVERAGE

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The advertising rate is $24.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.
Subject to Agency Commission.

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
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Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for September 15th issue closing September 2nd

ENGINEERS — DESIGNERS

Chemical - Mechanical - Electrical - Structural - Piping

San Francisco assignment

Recent design experience on petroleum refineries, chemical plants, or related projects. Compensation commensurate with ability. Liberal moving allowances.

Please write furnishing complete chronological experience record and salary history, also full details regarding education, salary desired, businesss and character references.

BECHTEL CORPORATION

220 Bush Street **San Francisco 4, Calif.**

FOREIGN AIRBASE PROJECT
IMMEDIATE OPENINGS FOR
DESIGN ENGINEERS & ESTIMATORS

Must have degree plus minimum 6 years A-E experience. Single status, 1 year contract renewable.

P-7506, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

POSITIONS VACANT

(Continued from preceding page)

Assistant City Engineer—Wanted by the City of Jackson, Michigan. Either (1) graduation from an engineering school of recognized standing and seven years of active practice and successful experience in engineering work, three years of which shall have been work of more than average responsibility in connection with engineering surveys, designs and construction, or (2) any equivalent combination of education and experience. Registration as a professional engineer in the State preferred. Liberal vacation and sick leaves; excellent retirement benefits; longevity pay benefits. Salary range—$5,592-$6,480. Apply Personnel Office, City Hall, 120 N. Mechanic Street, Jackson, Michigan.

Assistant Civil Engineer—Wanted by the City of Jackson, Michigan, Either (1) graduation from an engineering school of recognized standing, with specialization in civil or structural engineering, and at least one year of active practice and successful experience in engineering work in the office or field, or (2) any equivalent combination of education and experience; preferably licensed as a Registered Surveyor. Liberal vacation and sick leaves; excellent retirement system; longevity pay benefits. Salary range—$4,188-$4,836. Apply Personnel Office, City Hall, 120 N. Mechanic Street, Jackson, Michigan.

Wanted Engineer-Superintendent for heavy excavation and grading on roads, airports, etc. Must be graduate engineer between 30-40 years old who has been actively engaged in actually doing this type of work for at least the last five years in this capacity. This is a permanent position with a subtantial company in New York State. The opening has a real future for the right man. Salary open. P-7560, Engineering News-Record.

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 45 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
659 Brisbane Bldg. Buffalo 3, N. Y.

POSITIONS VACANT

Cost Engineering for Boston Building Contractor. Must be capable of processing job cost reports complete. Send resume education, experience and salary requirements. P-7527, Engineering News-Record.

Chief Estimator and assistant to the manager for young, expanding building contractor operating throughout the U. S. This is an unusual opportunity for an experienced construction engineer with proven ability to permanently associate with growing organization. Write full details of experience, personal information, references and salary requirements to Blount Brothers Construction Co. P. O. Box 949, Montgomery, Alabama.

Live-Wire Estimator and engineer to manage Branch office in Columbus, Ohio. for general contractor desiring to expand. P-7518, Engineering News-Record.

Architect or Engineer—Experienced graduate to supervise school construction for architectural firm. Either resident position or one with considerable travelling in connection with several projects. Throughout Michigan or within 100 mile radius surrounding Chicago. Salary dependent upon qualifications. Give summary of education and experience, with salary expected. P-7500, Engineering News-Record.

Paper Mill Construction Superintendent — Either foreign or domestic projects. Must have 20 years experience in all phases of paper mill construction including foundations, buildings, equipment setting, boilers, conveyors, piping and instrumentation. Must have proven administrative ability to coordinate all crafts. Reply should include full resume, age, assignment preference and salary required. P-7509, Engineering News-Record.

General Construction Superintendent — For foreign and domestic assignment. Should have 15 years experience heavy industrial building construction. Engineering background preferred. Must have strong references demonstrating extensive administrative ability and capacity to handly all phases of a project. Reply giving age, complete resume and salary required. P-7510, Engineering News-Record.

(Continued on page 116)

Architects
and/or
Architectural Draftsmen

Overseas employment opportunities in West Indies. Will be required to perform architectural design and/or drafting duties pertaining to construction of commercial type office buildings. Work assignments may also include industrial buildings and residences. Job duration 6-12 months.

Traveling expenses and liberal salaries paid.

Write giving age, marital status, education and details of previous experience.

BOX 308-W
RADIO CITY STATION
NEW YORK, NEW YORK

Sales Engineers

A major steel company has need for sales engineers in its rapidly expanding prefabricated steel building division. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan. Openings in Baltimore, Philadelphia and Pittsburgh.

P-6903, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

MECHANICAL ENGINEER

Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large expanding and progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience. Send resume to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

ENGINEERS
DESIGNERS AND DRAFTSMEN

Electrical, Mechanical
Structural & Hydraulic

Reinforced Concrete
Designers & Detailers

FOR WORK ON

Industrial Plants
Paper & Textile Mills
Water Supply & Waste Disposal
Steam & Hydroelectric Power Plants
Electrical Transmission & Distribution

CHAS. T. MAIN, Inc.

80 Federal Street, Boston 10, Mass.
317 South Tryon St., Charlotte, N. C.

CHIEF ENGINEER—CHEMICAL PLANT

To a responsible engineer capable of efficiently directing an engineering dept of 20 engineers . . . and 150 to 200 maintenance mechanics . . . plus negotiating with outside contractors on new construction & equipment installations, we offer a permanent position with liberal retirement, life insurance & hospitalization plans. Starting salary range $15,000-20,000 per annum.

Applicant must be graduate of an accredited engineering college . . . have 15 or more years well rounded experience in chemical plants . . . have professional engineers license in New Jersey or reciprocal state.

We are well established pharmaceutical & chemical manufacturers in New York Metropolitan area. Please submit resume of training, experience & salary desired.

P7440 Engineering News Record, 330 W. 42 St. New York 36, N. Y.

LAND IMPROVEMENT ENGINEER

Must be **THOROUGHLY EXPERIENCED** with extremely rough terrain on very large home development project. Capable of supervising heavy earth moving equipment and making responsible decisions on grading, drainage, etc. Preferably man with surveyor's experience. Prominent position and excellent future with very large building organization. **ONLY** man with above experience considered. Write giving full details, availability and salary expected.

P-7546, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALES ENGINEERS

Leading nationally known manufacturer expanding production and sales. Offers excellent opportunity for engineers desiring sales, promotion, and construction service work. Graduate preferred but experience may be substituted. Highway and concrete engineering background desirable for contacts with highway departments, contractors and concrete products companies.

Permanent positions with excellent opportunity for advancement. Attractive salary, company car and expenses with liberal company sponsored benefits. Positions available in several district offices.

P-7439 Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

Construction Engineer
To Be Employed In Spain

Must be graduate engineer and at least 40 years old. Experience in Materials Control Testing on air field construction including soils, asphalt and concrete testing necessary. Familiarity with good construction practices, air field design, and derivation of specification requirements also necessary. Prefer individual employed formerly by Architect-Engineering firm.

Submit complete resume to:

PERSONNEL MANAGER
A.E.S.B.
250 Hudson Street,
New York 13, New York

SANITARY ENGINEER

Opportunity available for Sanitary Engineer in an expanding pulp and paper mill located in the Middle Atlantic States. Age 25-35 years. Require man experienced in paper mill wastes, paper mill stream pollution and paper mill water purification. No other experience will be given consideration. Good salary and advancement. All replies confidential. Send resume of educational background and industrial experience to Director of Personnel

West Virginia Pulp & Paper Company
Luke, Maryland

REFINERY
CONSTRUCTION
SUPERINTENDENT
WANTED

Submit experience record and photograph
California Location

P-7552, Engineering News-Record
1111 Wilshire Blvd., Los Angeles 17, Calif.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

POSITIONS VACANT
(Continued from page 114)

Engineers experienced in water and sewage works projects or related fields. Opportunity for permanent connection with long established consulting firm. Please state full qualifications, experience, references and salary requirements. Location Ohio. P-7504, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, P. O. Box 674, Manchester, Vermont.

EMPLOYMENT AGENCIES

Wanted Engineers, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E., and Ind., also Teachers and Chemists, Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Construction Engineer, graduated with over 20 years experience as resident manager, cost and office engineer on domestic and overseas jobs. Very reliable. Knowledge of foreign languages. Capable of administration, planning and cost control. Just completed overseas assignment in Pacific. Write to PW-7418, Engineering News-Record, 68 Post Street, San Francisco 4, California.

Controller Office Mgr.—12 yrs. experience engineering & construction accounting. Top administrator all financial & accounting functions. Resume on request. Go anywhere. PW-7496, Engineering News-Record.

Engineer, 40 yrs. exp. preparation of contractors' claims for extra work, change orders. Heavy construction, buildings. PW-7482, Engineering News-Record.

General Supt. or Project Manager thoroughly experienced in heavy construction, industrial and commercial buildings. Experienced as manager, supt., estimator and project engineer. C.E., age 41. Desire permanent connection with expanding contractor in New Jersey or Metropolitan N. Y. area. PW-7494, Engineering News-Record.

Construction Engineer—29—overseas—will sign 1 year contract—single status. Roughest spot o.k. for pay. 7 years contractors man—large scale concreting—bridge erection—docks—bridge piers in major rivers **and deep cofferdams—also structural design** experience and P.E. Resume available. PW-7467, Engineering News-Record.

Building Construction Executive, thoroughly experienced estimating, buying sub-contracts, materials, etc.; managing field to produce good costs. PW-7568, Engineering News-Record.

Civil Engineer grad. reg. 3 years design irrigation canal structures 2 years planning 5 years varied experience in earth work highways waterworks sewers desires permanent location west of Mississippi. PW-7567, Engineering News-Record.

Architectural college graduate seeks position in eastern half country, preferably Baltimore. 5 years office, 3 years field work including last two years as Resident Engineer. PW-7549, Engineering News-Record.

Architect—Experienced in military construction in France would like design or supervision work in Europe. PW-7544, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Construction Supt. or Project Manager, aged 46, graduate civil engineer, 18 years experience in diversified construction of Super Highway, bridges, air force bases and PWA housing projects, in Maryland, Penna, Ohio and Indiana. Just completed three and one-half million dual lane highway for state of Maryland, good organizer, have efficient following with exceptional clean record of accomplishment, will go anywhere, available at once. PW-7535, Engineering News-Record.

Architectural draftsman, struct'l engr. industrial bldgs., prefer central states. PW-7528, Engineering News-Record.

Superintendent-Administrative: 20 yrs highway, airports, dams. Phone Los Angeles, ATlantic 67843 or Box No PW-7576, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT - USED or RESALE

UNDISPLAYED —RATES— DISPLAYED

$1.80 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
PROPOSALS, $1.80 a line an insertion.
BOX NUMBERS count as one line additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS to N. Y. Office, 330 W. 42nd St., N. Y. 36, N. Y. for September 15th issue closing Sept. 2nd.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

BUSINESS OPPORTUNITIES

Practicing Engineer desires to purchase substantial interest in a Florida Engineering and Surveying Corporation. Address BO-7464, Engineering News-Record.

For Sale—Well established and completely equipped construction business enjoying an excellent reputation for high quality work. Specializing on homes, light industrial and commercial construction, this business is located within 80 miles of one of the Eastern Seaboard's most progressive cities. It is in a popular vacation section but has a basic sound industrial economy. The area is ready for some speculative building. In addition to its construction business, this company has three good selling franchises closely allied to its building work. This is an excellent opportunity for a single owner to net $15,000 per year with an investment of less than $60,000. BO-7511, Engineering News-Record.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

ESTIMATORS Pocket-Size 150 tables proven thousands of them use labor hours, material quantities for rapid unit-cost calculation. "BUILDING LABOR CALCULATOR" postpaid $10.00 with order. Thirty sixth year. Ten days free trial money back guarantee. TAMBLYN SYSTEM, 1420 Gilpin Street, Denver 18, Colorado.

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.
WILSON *Engineering Corp*
College House Offices HARVARD SQ. CAMBRIDGE MASS.

BUSINESS OPPORTUNITY
Established Road Machinery Concern in expansion program will offer for investment with personal services up to Sixty Thousand Dollars or more to one or two persons with road machinery or kindred experience and desire to locate in Virginia.
BO-7529, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

FOR SALE
AUTOCAR FLEET
12 DC100 Dump Trucks 14.5 cubic yards water level bodies. Excellent condition, practically new. Large selection of spare parts goes with fleet.
New Jersey Call Colfax 2-4141

HYDRAULIC TURBINE SERVICE
Cavitated and Damaged Runners Repaired
Cast Iron, Cast Steel, Bronze and Stainless:
Emergency Services:
Inspection and Supervision Services:
30 years' experience
- Use of Stainless Steel for cavitation repairs for long life
- Work performed in place on runners where damaged areas are accessible
- Draft tubes and liners repaired and replaced
- Leaking penstocks and scroll cases repaired

SERVICE ANYWHERE
Write for Bulletin No. 501
Welding Engineers, Inc.
Norristown, Pa. *Phone: 8-6900*

"Announcing" a new truck crane service: TRANSIT CRANE SERVICE, Westfield, N.J. Available to N.J. and Met. N.Y. contractors. Reasonable rates, reliable equipment. P & H, Bucyrus Erie, Lorain, call: Westfield 2-1964.

OVERHEAD CRANES For Sale

Capacity	Span	Volts	Girders	Ser. Nos.
15 Ton	75' 1"	DC	FB Box	7378
20 Ton (2)	60' 0"	DC	FB Box	7381-2
15 Ton (2)	56' 11"	DC	FB Box	7379-80
20 Ton (2)	38' 5"	AC	FB Box	7385-6
15 Ton (2)	23' 11"	AC	Straight	7383-4

GEORGE M. MERIWETHER
1712 Seventh Avenue, No.
Birmingham 4, Alabama
TELEPHONE 54-2456

Completely rebuilt and guaranteed
KOEHRING TWINBATCH 34E PAVER
Serial #19376, GM diesel, over $4,000.00 in parts and labor used in rebuilding. Machine in perfect condition. Ready for immediate inspection and delivery.
Price $14,000.00 f.o.b. Chicago.
GIL BOERS EQUIPMENT CO.
7625 S. Kedzie Ave., Chicago 29, Ill.

FOR SALE
2—3 c.y. Hercules Aircreter, Ready Mix Concrete bodies, complete with hoists and controls. Like New—$900.00 each.
ROBERT R. ANDERSON COMPANY
4550 Patterson Avenue
Chicago 41, Illinois

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Drop Hammers - Driving Caps
Steel Leads - Pile Driver Hose
Hoists and Boilers

CONTRACTORS MACHINERY CO.
Phone VAlentine 4740
2637 SOUTHWEST BLVD
KANSAS CITY 8, MO

EUCLIDS

Used 13 yd. bottom dumps
Cummins & General Motors Powered
Located - Texas - Pa. - N. Y. State
Write, Wire or Phone
L. B. SMITH, INC.
Camp Hill, Penna.
Tel: Harrisburg, Regent 7-3431

Overhauled Equipment For Sale

CRAWLER TRACTORS	SALE PRICE
1—International Harvester Model TD24. Put in our rental service 4/16/51. Clock reading—3586 hours. Ser. No. TDE 2565.	$11,000
1—International Harvester Model TD24. Put in our rental service 4/17/51. Clock reading—3200 hours. Ser. No. TDE 2568.	$11,000
1—International Harvester Model TD24. Put in our rental service used on 4/21/52. Clock reading—1000 hours. Ser. No. TDE 1953	$9,000
1—Caterpillar Model D8. Put in our rental service 4/29/52. Clock reading 4971 hrs. Ser. No. 2U-10910	$13,500
1—Allis-Chalmers Model HD19. Put in our rental service used on 10/12/53. Clock reading—3846 hours. Ser. No. HD19H-1687	$10,000

WHEEL TRACTOR

1—Model D1 Case Tractor, complete with self-starter. Ser. No. 5820209, with Model 4B Front End Loader, ballast box and ¾ yard bucket. Ser. No. B1721. Put in our rental service on 5/1/53 ..... $3,000

TRUCK CRANES

2—Link Belt Model HC90, 25-ton capacity, with 90 ft. alloy main boom and 30 ft. alloy jib. Ser. Nos. 7AT1155 and 7AT-1199. Both of these units were put in our rental service new 1949. each $22,000

UNITED HOISTING CO., INC.
9 WEST SHEFFIELD AVENUE
ENGLEWOOD - NEW JERSEY

FOR SALE OR RENT—EASY TERMS
Rebuilt — A 1 Condition

48B Bucyrus Erie Shovel 2 cy Diesel
Caterpillar Auto Patrol No. 12
Caterpillar D8 Bulldozer
Caterpillar Scraper Model 80
3—Caterpillar DW 10's

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6500

FOR SALE

1 P.&H. 855 lifting crane, long crawlers, 90′ boom, fairleads and dragline bucket. Crane recently reconstructed to 955 lines. Excellent condition. F.O.B. New Carlisle, Indiana ... **$35,000.00**

2 1954 Euclid rubber-tired scrapers, 15.5 cu.yd., Cummins diesel, 275 h.p., used only 1000 hours. F.O.B. New Carlisle, Indiana Each **$27,500.00**

1 Lima 34 Paymaster ¾-yd. dragline equipped with 35′ boom and fairlead; wide tracks. Used on four jobs. F.O.B. New Carlisle, Indiana **$10,500.00**

1 Blaw-Knox Model P-150 APSCO Paver; new in September 1954. F.O.B. Norwalk, Ohio. **$9,750.00**

1 Michigan ½-yd. Crane with attachments: ½-yd. backhoe; ⅝-yd. drag bucket and fairlead. Wide tracks. Excellent condition. F.O.B. New Carlisle, Indiana **$9,750.00**

1 Allis-Chalmers HD 15 Tractor; used about 1200 hours; New September 1954. F.O.B. New Carlisle, Indiana ... **$10,500.00**

1 Allis-Chalmers HD 5 backhoe attachment **$500.00**

CHAPIN & CHAPIN, Inc.
U. S. Route #20 East, Norwalk, Ohio
Phone: 2-4451

DEPENDABLE USED MACHINES

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EDITORIALS

Can Flood Control Cope with Flash Floods?

THE GREATEST DAMAGE from the floods that swept parts of five northeastern states two weeks ago occurred along the courses of small streams rather than in valleys of the large rivers, as in 1936 and 1938. There were a few exceptions, but that was an outstanding characteristic of this disaster and one that is bound to affect flood-control planning of the future. It may even result in major changes in existing flood-control programs.

This departure from the traditional flood pattern was due to the abnormal character of the rainfall in the days preceding the arrival of the rainstorm into which hurricane Diane degenerated and to the unprecedented precipitation during that storm. In most areas the ground was saturated, and the streams and ponds were full when the latter storm dumped many inches of additional rainfall over most of the area in a few hours.

What is the significance of this unusual happening?

From the most pessimistic viewpoint, it means that flood-control planning is largely ineffective to cope with such storms. When rains fall in such a sequence and at such a high rate over the entire watershed of a small river, there usually is no way to prevent a major flood in the river itself because space to store enough water to prevent a flood is not available. The farm ponds and plowed contour furrows, which the advocates of "stopping the rain when it falls" talk so much about, would all be full to overflowing when the final downpour arrived. In valleys where some storage can be provided part way down the stream to cut the flow near the lower end of the valley, the area required for such a reservoir frequently is the best farm land in the valley. Or that area may be occupied by a town. Construction of reservoirs on such sites generally is strongly opposed.

From a more optimistic viewpoint, however, there are things that can be done to minimize the destructiveness of floods in small river valleys if the affected communities will stand for the radical changes that are necessary and accept a reasonable share of the costs that are involved.

For example, to provide a safe channel capacity, many buildings may have to be removed or set back, bridges raised and lengthened and the channel bottom cleaned of debris accumulated over many years. Possibly a parallel flood channel may be required, or flood walls or dikes may have to be built.

Outside the towns, pumping plants, power stations and factories that cannot be moved out of the flood plain can be diked. Inside or outside, dwellings may have to be prohibited in areas known to be subject to dangerous flooding. And finally, if sites for flood detention reservoirs are available, the necessary dam can be built.

There is little provision for this type of work in small river valleys in existing federal flood-control laws or in the current plans. The laws were written to implement flood-control on the nation's major river systems. Most reservoirs that have been proposed for small river valleys are designed to be operated to provide maximum benefit for the main river, not for the tributary. Hence the need for a new look at flood-control planning on a national scale to determine where the available money can be used to best advantage.

Also, as the Hoover Commission noted, the present legislation puts too small a share of the cost on the benefited communities. If more of the type of work outlined above is to be done, the need for clearer definition of what part the local community must bear becomes more imperative because the benefits are chiefly local. Otherwise flood-control work can degenerate into community improvements at federal expense.

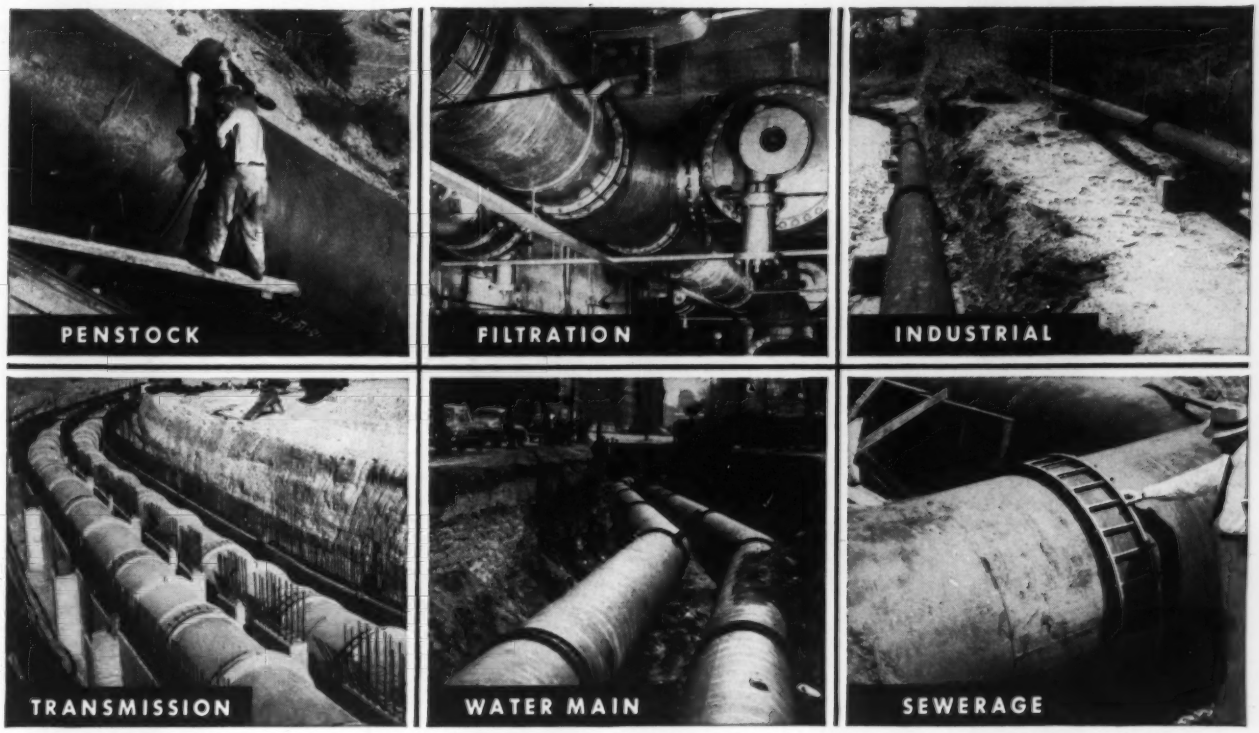
Aid for Airports

CONGRESS, in a last-minute move, laid the groundwork for a large expansion in airport building and modernization during the next four years (ENR July 28, p. 21. Better still, by committing itself in advance to make a definite appropriation for federal aid to airports during each of the next three fiscal years, Congress put airport planning on a long-range basis similar to that on which highway construction is planned. This will be of great to help to municipalities in planning their airport programs and in raising funds to match federal aid.

Despite the continuing growth of airplane traffic, airport construction and modernization has been in the doldrums for several years, due to lack of enthusiasm for an expanded program on the part of the Administration or the Commerce Department, or both. As a result, a large backlog of work has piled up that can be put under way quickly. Local funds available at the present time for matching federal money are estimated at $128 million. The bill passed by Congress authorized $42 million in airport aid for the current fiscal year in addition to the $20 million already appropriated. And $63 million in aid will be appropriated for each of the following three years.

The new airport-aid bill also lifts restrictions as to use of federal funds that have worked to the disadvantage of some communities.

In summary, the new act puts airport work on a much sounder basis than at any time in the past.



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DRESSER COUPLINGS

make joining easier, surer!

Every pipe line presents individual problems. Steep grades, cramped space, tight deflections, high pressures, vibration and so on.

That's why the versatility of Dresser Couplings is so important... from penstocks to sewerage lines. Using this simple, foolproof method, contractors or construction crews hit estimates and completion dates on the nose, on jobs that give permanent satisfaction.

Dresser-Coupled steel pipe lines are installed in longer, easier-to-handle lengths. The high tensile steel allows thinner pipe walls, saves weight. The longer lengths mean fewer joints. And using the Dresser method, there's no heat to damage linings, no weather delays to run up costs or ruin completion targets.

Moreover, factory-made Dresser Couplings eliminate exact pipe fitting and alignment. Their specially compounded rubber gaskets absorb vibration and expansion-contraction movements. Leakproof, maintenance-free service is guaranteed for the life of the line!

V *Wherever water flows, steel pipes it best.* **Always put steel pipe and Dresser Couplings in your specifications.**

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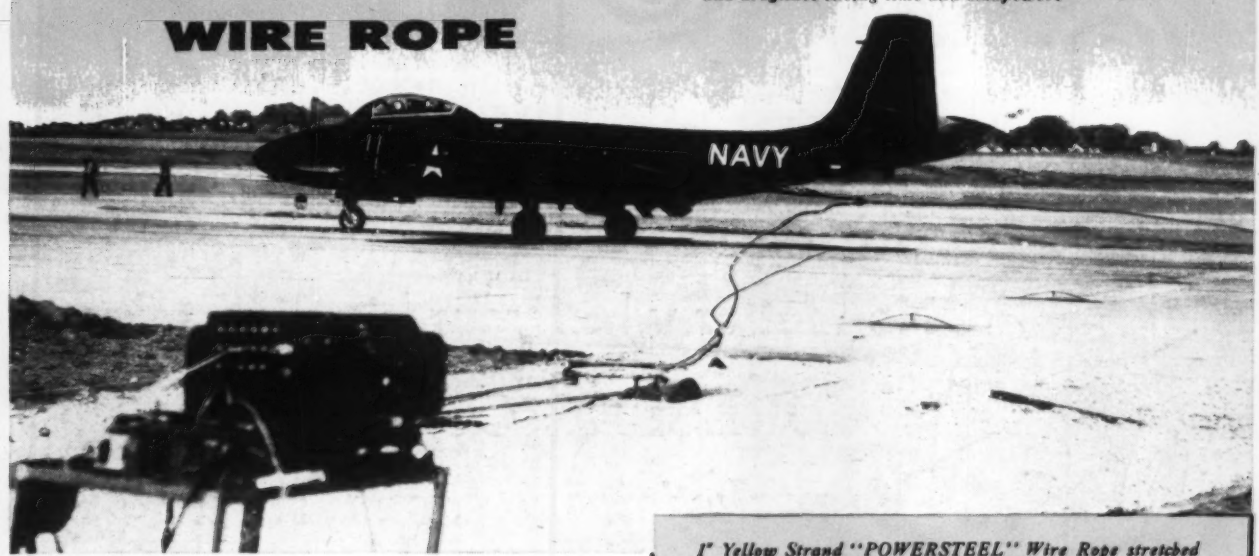
YELLOW STRAND "POWERSTEEL" WIRE ROPE

"POWERSTEEL" cuts rope replacement costs on shovels and draglines saving time and manpower.



1" Yellow Strand "POWERSTEEL" Wire Rope stretched across the runway at Lambert Field, St. Louis brings the Banshee fighter to a safe, sure stop.

■ You may never have to lasso a 600 MPH jet —but if you have an application requiring an extra margin of strength, it's a cinch for Yellow Strand "POWERSTEEL"!

Made of higher carbon content steel, new "POWERSTEEL" is 15% stronger, assuring longer life. It withstands shock, resists wear. Preformed, with IWRC, "POWERSTEEL" is a heavy-duty, crush-resistant rope designed to give long, dependable service.

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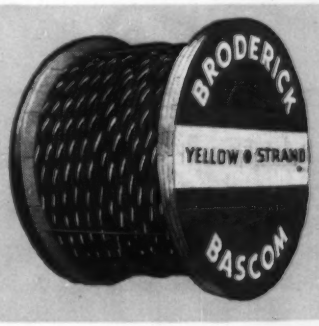
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